Cement MILL SECTION of

Concrete

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Superior Company Completes New Clinker Storage

By W. R. Bendy

The Superior Portland Cement Co. of Concrete, Wash., has made in the past few years a number of improvements tending to greater plant efficiency and increased production. The latest of these is a new system of clinker storage which, while being adapted to the needs and original layout of the plant, embodies the latest ideas of cement engineers regarding the economical storage and handling of large quantities of cement clinker. It replaces the old method of distributing and reclaiming the clinker with a derrick and grab-bucket supplemented by donkies and scrapers.

The manufacture of portland cement is a chain of operations, any one of which is dependent on all those preceding it. Storage of the partly manufactured material may be provided between any of these operations.

Extensive storage of uncrushed rock is usually impracticable, and storage of ground rock, wet or dry, becomes costly if carried far beyond the amount needed to secure adequate chemical control.

In modern plants considerable storage is provided at three of these points—crushed rock, clinker and cement, it being considered that the greater the amount of the storage, the longer the period for which a part of the plant dealing with a preceding operation can be shut down for repairs without stopping the whole plant. Of these, two are not altogether suitable for storage, for the crushed rock needed to produce one barrel of cement occupies over 50% greater volume than the equivalent amount of clinker, while cement has the disadvantage that it can be stored only in completely protected bins.

Clinker, usually considered as 75% manufactured,

Quarrying { Uncrushed rock storage } Crushing { Crushed rock storage } Raw grinding { Ground rock storage } Burning { Clinker storage } Finish grinding { Cement storage } Sacking and shipping

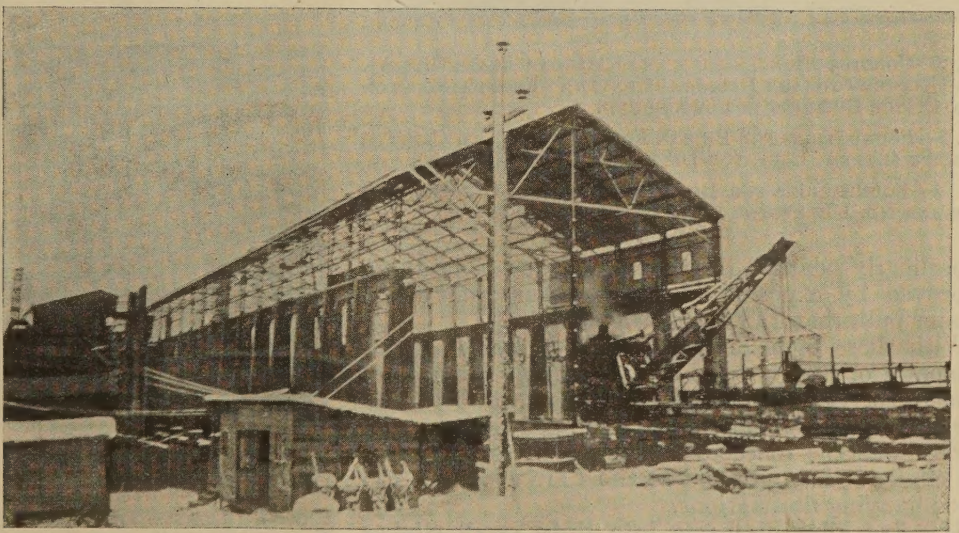


Fig. 1—New Clinker Storage Building of Superior Portland Cement Co. under Construction. Locomotive Crane on Construction Track Lifting One Girder of the Electric crane. Crane Trucks Already on Crane Track.

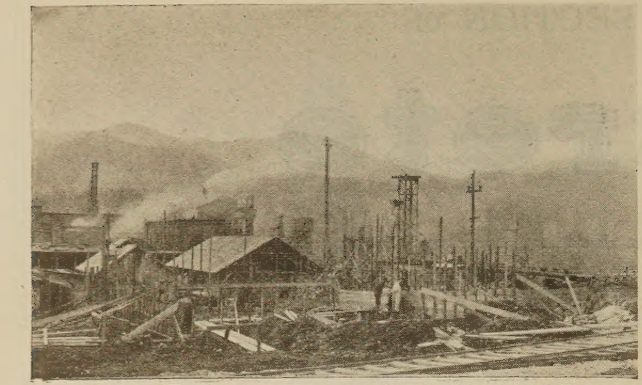


FIG. 2—CONSTRUCTION TRESTLE AND RAILROAD TRACK (RIGHT). OLD CLINKER STORAGE DERRICK (CENTER). FOUNDATIONS FOR NEW OFFICE BUILDING IN FOREGROUND.

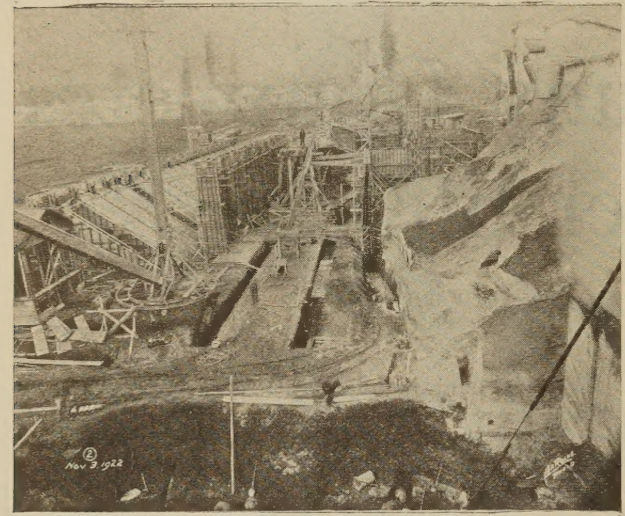


FIG. 3—FOUNDATIONS FOR BINS IN FOREGROUND. OLD CLINKER DERRICK (LEFT). ELEVATOR DISCHARGE CHUTES (RIGHT).

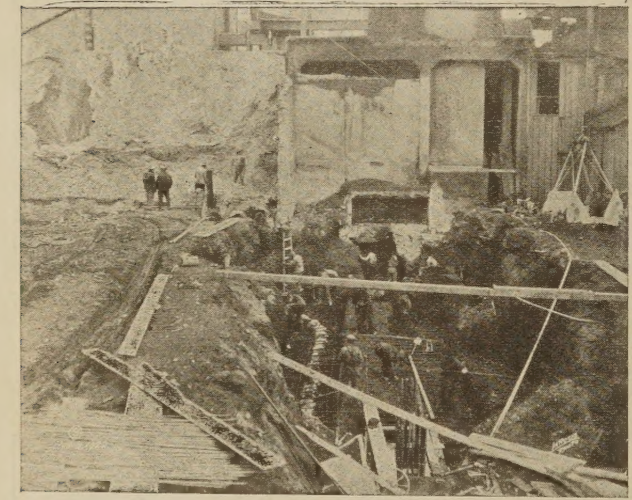


FIG. 4—FOUNDATIONS FOR BINS AND TUNNEL. OLD CLINKER PILE AND NO. 1 ELEVATOR DISCHARGE CHUTE (LEFT).

is peculiarly adapted to storage, it being if anything improved by exposure to the weather, and of no greater bulk than the finished cement.

With these facts in mind, the Superior Portland Cement Co. designed its clinker storage for a total capacity of 120,000 barrels, equivalent to about five weeks run. A traveling crane equipped with a grab-bucket was the method decided upon for handling the clinker. Layouts and sections are shown in the accompanying illustrations.

The five kilns discharge into three small clinker pits, each having an inclined chain and bucket elevator delivering over the top of the rear wall of the kiln room. The floor of the main storage is at the same level as the kiln room floor. Its dimensions in plan are 61 ft. x 212 ft., and along the sides there are retaining walls sloping outwards at 35° with the horizontal. Beneath the discharge chutes of the elevators is a pit 10 ft. 6 in. deep, 18 ft. wide and 125 ft. long, separated from the main storage by a retaining wall 20 ft. high along the sides and ends. The hot clinker drops directly from the elevator chutes into this pit, which has a storage capacity equivalent to about three days' run. From there it is reclaimed by the grab-bucket and dumped in some other part of the main storage building to cool. At the end of the building are two circular bins 25 ft. high and 25 ft. diameter, one to contain clinker and the other gypsum. The storage of clinker is about 3,200 barrels, or one day's run, and of gypsum about one month's run.

A belt conveyor is located in a tunnel directly beneath the two bins, two shaking feeders and an automatic weighing machine being provided beneath the clinker bin, and one variable rotary feeder beneath the gypsum bin. Both deliver onto a 24-in. belt leading to the preliminary grinding mills.

Cold clinker is picked up by the grab-bucket from any required place in the main storage and dropped into the clinker bin. By filling this bin full during the day, it is possible for the crane to handle the whole output working only eight hours. The capacities of the hot clinker pit and of the cold clinker bin are well able to provide for the remaining sixteen hours of the day.

Gypsum is delivered to the bin from a track hopper, (also used for unloading coal) by means of two belt conveyors carried on trestles. The correct proportion of gypsum is added by dumping one bucket of gypsum to every so many buckets of clinker. The gypsum merely has to be taken from the gypsum bin with the grab-bucket, and dumped into the clinker bin. Normally the rotary gypsum feeder does not function, but should a sudden change be required in the proportion of gypsum added, the feeder will be started and an immediate alteration in gypsum contents secured without emptying the clinker bin. It will also be used if the gypsum and clinker show any tendency to segregate in the clinker bin.

DESIGN

All retaining walls, the floor, the bins, the crane columns and the beam supporting the crane track are of reinforced concrete construction. The sloping side walls, supported by buttresses 8 ft. on centers,

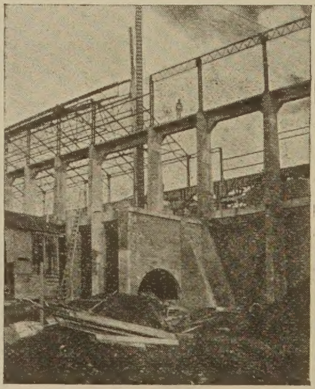


FIG. 5 (LEFT)—VIEW FROM WEST SHOWING OLD CLINKER DERRICK STILL IN PLACE.

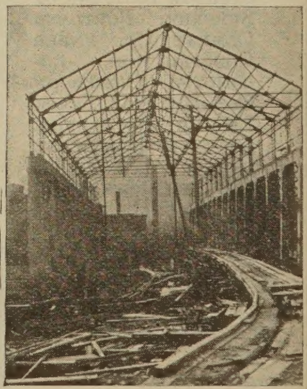


FIG. 6 (RIGHT)—VIEW FROM NORTH END. OLD CLINKER DERRICK BEING USED IN ERECTION OF STEEL ROOF. CONSTRUCTION TRACK IN FOREGROUND.

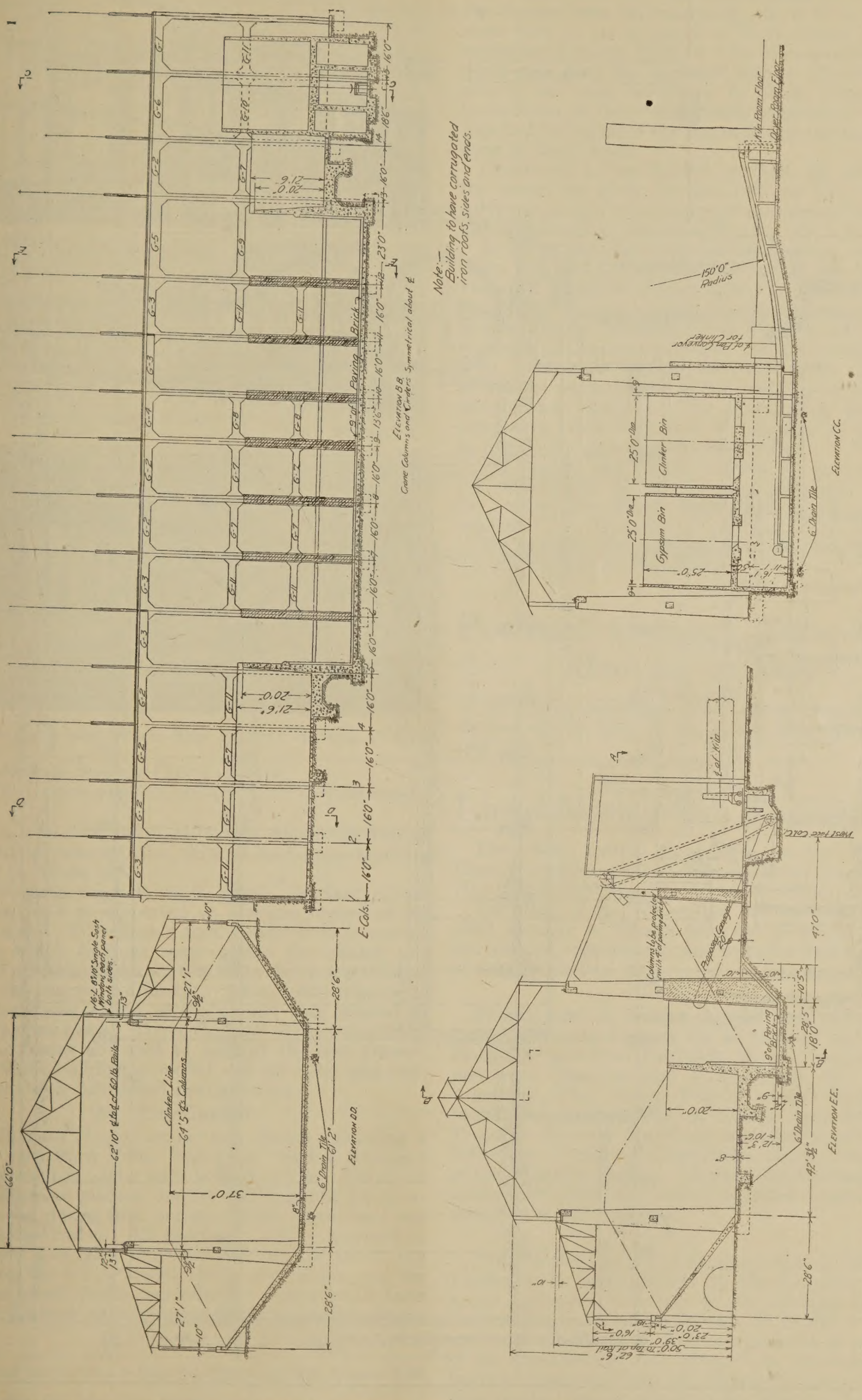


Fig. 7—Sectional Elevations Showing Arrangement of Clinker Storage

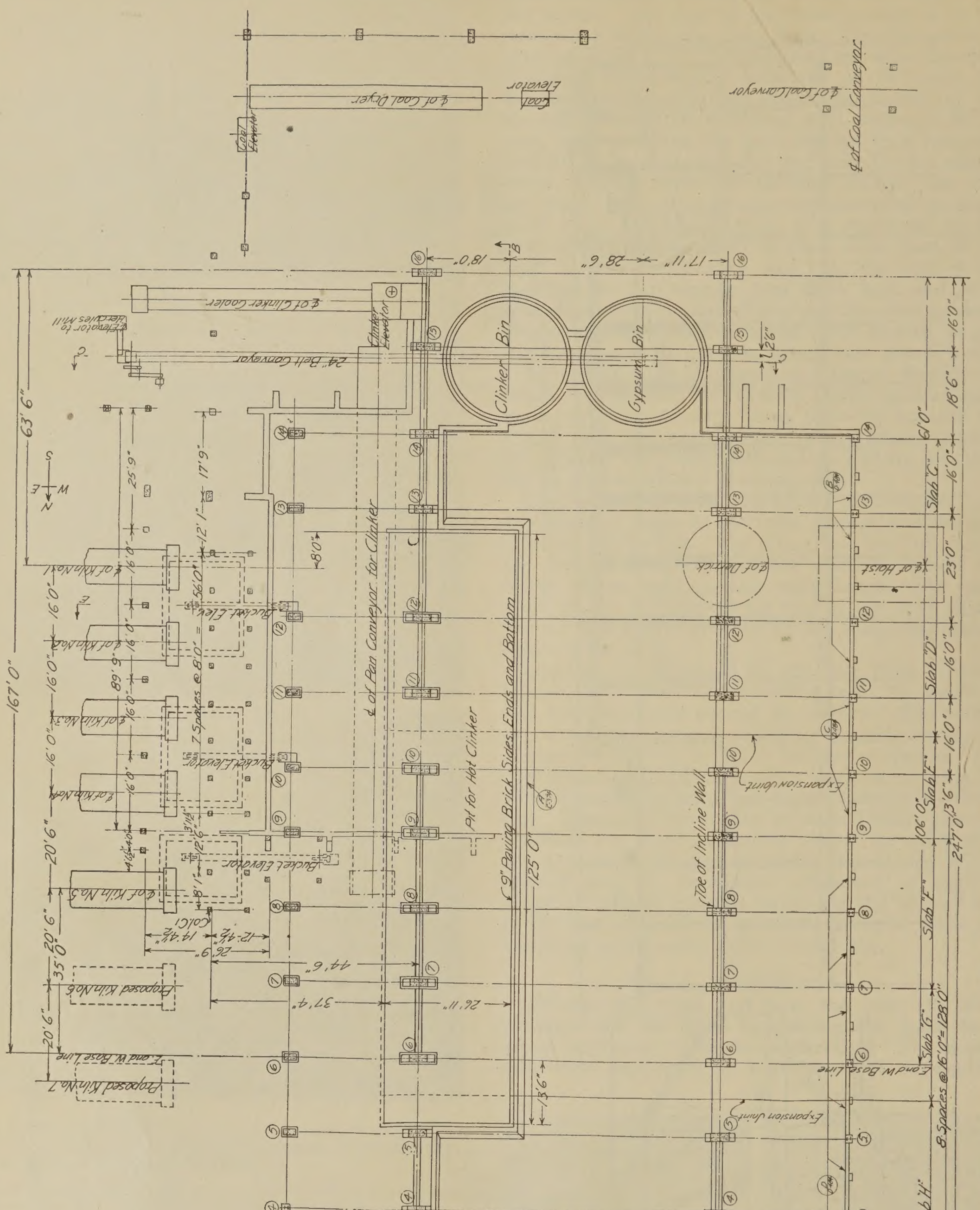
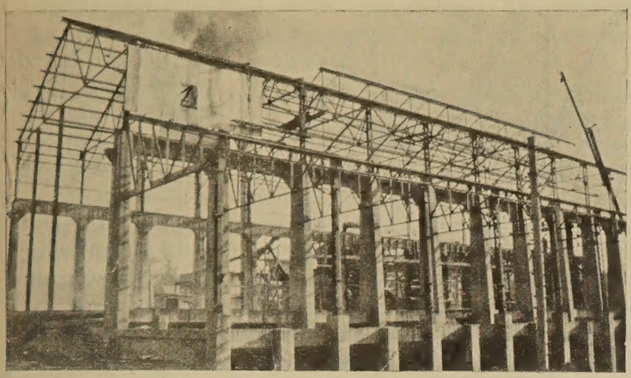
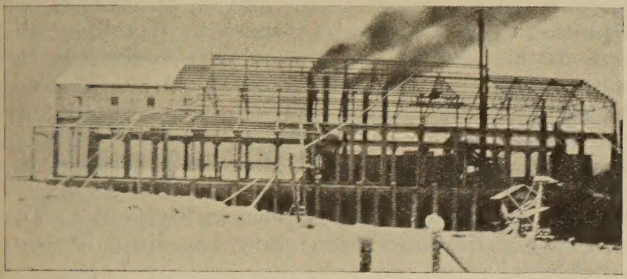


Fig. 8—Plan Showing Lay-out of Storage and Adjoining Equipment





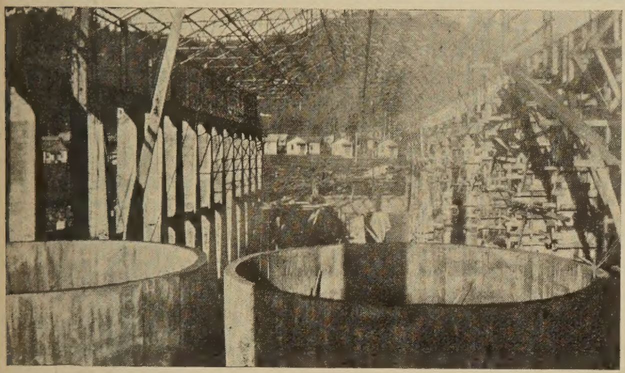


Fig. 9—View from North-West Showing Derrick Placing Steel.

Fig. 10—Steel Sheeting Partly in Place.

Fig. 11—Looking over Top of Gypsum and Clinker Bins.

rise to a total height of 21 ft. 6 in. above the floor of the storage, and are 16 in. thick at the bottom tapering to 12 in. at the top.

The crane track is 50 ft. above the floor of the storage, and is supported on columns spaced at 16-ft. centers. They have a total height of 49 ft. except those whose footings come within the clinker pit, which are 60 ft. high. An 8-in. floor slab was provided, with the necessary drainage. All concrete exposed to the scarifying action of the clinker was encased in 9-in. paving brick. Above the level of the crane track steel columns are used to support the roof trusses. The whole building is roofed and the sides and ends covered with galvanized steel sheeting.

The Crane

A Shepard 7½-ton crane[1] was chosen, operating a three-yard Blaw-Knox "Speedster" bucket[2] arranged for three lines. The span is 61 ft. 10 in. There are four separate motors, one for hoisting, one for operating the closing line, one for trolley travel, and one for bridge travel. All gearing is totally enclosed in oil tight casings. The hoisting speed is 90 ft. per minute, the trolley travel 150 ft. per minute, and the bridge travel 400 ft. per minute. Operation is from a cage located on the side remote from the hot clinker pit.

Construction

The ground on the site sloped along the length of the storage from approximately the level of the kiln room floor to an elevation of 15 ft. above it. This necessitated about 7,000 cu. yds. of excavation. The work was done by contract with a 1¾-yd. steam shovel, and was completed in about three weeks. In addition to this, considerable excavation for footings and trimming of the slopes left by the shovel was done by hand labor.

Construction was started on Sept. 24, 1922, and the crane was given its first trial on Feb. 2, 1923. Adverse weather conditions were met about Christmas, but construction was delayed only by a few days.

A 1:2:5 mix was used for all footings and floor slabs, and a 1:2:4 mix for the rest of the building. For some weeks the temperature was in the neighborhood of 12°F., and as time was an important factor, it was thought advisable to use a richer, 1:1½:3 mix for some of the crane columns and the circular bins. Two permanent expansion joints were provided across the whole length of the building, to allow for temperature changes. The illustrations show the temporary track built into the storage on a trestle to handle the materials on construction.

The designs were made entirely by the engineering department of the Superior Portland Cement Co., under the active supervision of the superintendent, C. L. Wagner.

The contract was carried out by the Rounds-Clist Co. of Portland and Seattle.

Portland Cement Association Meeting in May

The Spring meeting of the Portland Cement Association will be held in St. Louis, Mo., May 21, 22 and 23.

Lime Association Convention

The Fifth Annual Convention of the National Lime Association will be held at the Hotel Commodore, New York city, June 13, 14 and 15, 1923.

The work of the convention will be devoted in a large measure to reports from the technical men of the research organization, and from the field engineers of the association.

Freight rates on cement shipped from mills of the Lehigh Portland Cement Co. at Ormrod and Chapman, Pa., and from Fordwick, Va., to Miami, Fla., and from Chapman and West Coplay, Pa., to St. Augustine, Fla., during Federal control have been found not unreasonable or unduly prejudicial by Examiner Bronson Jewell in a tentative report to the Interstate Commerce Commission on the complaint of the cement company. Charges on 18 carload shipments were disputed. Examiner Jewell recommended dismissal of the complaint.

The Director General of Railroads and the Missouri Pacific R. R. were ordered by the Interstate Commerce Commission to pay to the Glencoe Lime & Cement Co. on or before January 25, $1,600 with 6% interest from March 1, 1919, as reparation on account of an unreasonable rate charged on numerous carloads of limestone from the Glencoe's quarries to its kilns on the Glencoe branch of the Missouri Pacific.

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[1] Shepard Electric Crane & Hoist Co., 406 Schuyler Ave., Montour Falls, N. Y.

[2] Blaw-Knox Co., Freeport Rd., Hoboken, N. J.

Scientific Quarry Blasting[1]

By J. Barab
Hercules Powder Co.

During the last ten years, blasting practice among quarrymen has greatly improved. You are all familiar with the greater efficiency, economy and safety which have resulted from the increasing use of well-drilled holes, certain high cartridge-count special ammonimu nitrate dynamites and Cordeau-Bickford.

I shall speak briefly of this; but if we wish to use explosive forces to the best advantage we ought to know something about the way these forces act; therefore, before going into any of the details of quarry blasting I am going to take a little of your time to explain the theory of explosions, and to present diagrams which may give some of you a clearer idea of what takes place during the blast.

An explosive reaction is the rapid transformation of the explosive, which may be solid, liquid, or a mixture of substances, into other more stable substances—largely or entirely gaseous—of much greater volume; such a reaction produces intense heat. This is a very general definition, and it also accords with the definition of combustion; because an explosive reaction is always a form of combustion. It is the rapid expansion of gases into a volume very much larger than the original substance which causes destruction or accomplishes useful work. Contrary to beliefs that are still widely held among blasters, the force of an explosion is exerted equally in all directions. This may be demonstrated by confining an explosive in the center of a sphere.

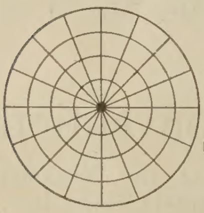

Fig. 1

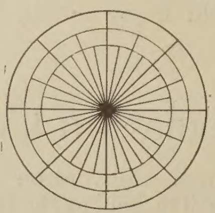

Fig. 2

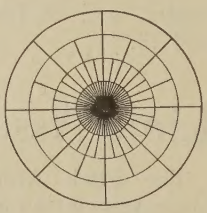

Fig. 3

Figure 1 represents the effect when water is so confined and is heated until the pressure is sufficient to burst the sphere. This is what happens when a steam boiler explodes.

Figure 2 represents the effect when an explosive such as black powder is set off in a sphere, and Figure 3 illustrates the same thing with a high explosive like dynamite.

The lines radiating from the center in these diagrams represent the forces which result from an explosion. It will be noted that in Figure 1 all lines go to the outer surface of the sphere; in Figure 2 only a portion reach the surface and a still smaller portion in Figure 3, where there is a marked concentration of lines immediately around the explosive. The greatest effect on the surrounding material will be produced where the lines have the highest concentration. These three figures clearly show the difference in shattering effect between a low order of explosion like that produced by steam, and a high order such as is produced by dynamite. This demonstrates why it is that black powder has a less shattering effect, and more of a spreading effect than dynamite.

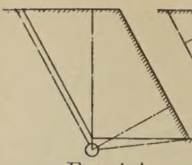

Fig. 4-A

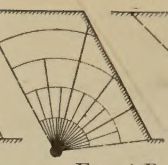

Fig. 4-B

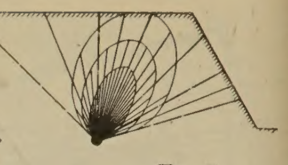

Fig. 5

Figure 4-A shows a section of a bank in which pocket loading was used, and the bank is so proportioned that if properly loaded no "toe," or hard bottom, will remain after the shot.

Figure 4-B indicates the useful action that would occur if the resistance were equal on all sides of the explosion. Forces equal to those indicated by the lines in the segment shown would be working in the other segments, but would not contribute toward breaking down the bank. But in quarry shooting the resistances are very much greater below the explosive and on the side away from the face, and therefore, the action that takes place is not as is shown in Figure 4-B but is similar to that shown in Figure 6-A. The forces that are liberated follow the lines of least resistance.

When a hole is drilled so that the charge is located as shown in Figure 5, the "toe" being too great for a satisfactory shot, hard bottom will remain, because in following the lines of least resistance the forces will expend themselves without breaking the "toe" to the bottom.

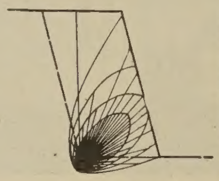

Fig. 6-A

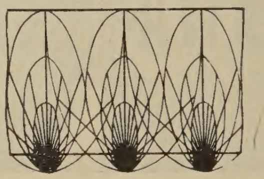

Fig. 6-B

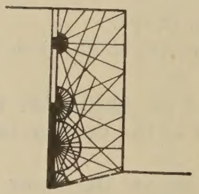

Fig. 7-A

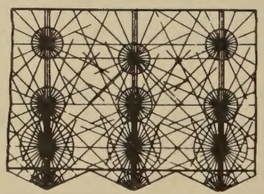

Fig. 7-B

Figures 6-A, 7-A and 6-B and 7-B illustrate the difference in the action produced by explosives in pocket loading and in column loading. We have seen that the greatest shattering action is always in the vicinity of the charge. In pocket loading Figures 6-A and 6-B, this is at the bottom of the hole; whereas in column loading, Figures 7-A and 7-B, as the charge is distributed throughout the length of the hole, the shattering action is distributed over greater area.

Pocket loading, whether in machine or well-drilled holes, or tunnels, is most satisfactory in rock that will break small enough by the force of its fall. Rock that is too hard for this requires the direct action of explosives to break it sufficiently, and in such material, column loading should give best results.

Special Blasting Methods

Practically all grades of explosives have been used at one time or another in quarry blasting. The explosive first used was black blasting powder, and it is still used to some extent. If it will do the work, it is the most economical explosive to use. However, most of the improvements of the last ten years have been accomplished with other explosives. During this period well-drilling has become an established method in many parts of the country.

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[1] Part I of a paper delivered at the Sixth Annual Convention of the National Crushed Stone Association, Chicago, Ill., Jan. 16, 1923.

Costs have been brought down rapidly by column loading in well-drilled holes with certain special high cartridge-count ammonium nitrate dynamites. These special dynamites have proved more effective than the high velocity explosives which they have often replaced, because their velocity is less and their action is not so shattering in the immediate vicinity of the charge. These dynamites are about midway between black powder and high grade nitroglycerin dynamites both in velocity and strength. Also, they are cheaper. They cost about the same per hundred pounds as 40% Extra; they can usually be shot, cartridge for cartridge, with the 40%, but as there are about ⅓ more cartridges in a case, their economy is self-evident.

In deep well-drilled holes electric shot-firing has been largely displaced by Cordeau-Bickford, which is a small lead tube filled with T. N. T. Its rate of detonation is about 17,000 ft. per second, and by using this throughout the entire length of the drill hole, a higher velocity is imparted to the explosive used, if its rate of detonation is less than that of the Cordeau. Besides increasing the rate of detonation, Cordeau insures complete detonation throughout the length of the charge. Conservatively estimated, Cordeau increases the efficiency of an explosive at least 10%, and this increase will usually more than pay for the Cordeau. It has another important advantage in its safety. It is the only high explosive which can be regularly shipped by express under the I. C. C. regulations.

In addition to providing increased safety and efficiency Cordeau also decreases the amount of time and labor in connecting up a shot. To make the connections for a large number of holes, when firing with electric blasting caps, takes considerably more time than is required with Cordeau. Each electric blasting cap and all connections should be tested with a galvanometer to be sure there are no breaks in the circuit and great care has to be exercised to avoid wrong connections. Where more than one electric blasting cap is used in a hole, which is necessary with deck-loading, and advisable in column loading, the cost for time and labor and the chances of making mistakes are decreased proportionately with Cordeau. Connecting all holes to the trunk lines is comparatively simple and takes only a fraction of the time required for electrical connections. When Cordeau is used, there is no necessity for a blasting cap on the job until just before firing.

I believe this makes quite clear the reasons why these comparatively new methods have lowered costs; and I think that any of you who have not considered one or all of them as a possible means of increasing efficiency should do so. The details of their application under usual conditions need not be discussed before an assembly of this kind; but most work is not so simple that we can deal constantly with ordinary conditions. I have run across some quarry blasting problems that are somewhat out of the ordinary, which I shall present to you with diagrams showing how they were successfully solved. In doing this it is not my thought that many of you will have exactly similar conditions to contend with, or that you can solve your unusual problems in exactly the same way, but because I believe that they may prove suggestive, and that your own ingenuity will devise modifications which will adapt them to your work.

At a large silica sandstone quarry it was found that, when the holes were drilled in a straight line, the rock was ordinarily brought down in large sizes. Apparently in this rock the explosive expended most of its energy in shearing the rock from the face without sufficient shattering effect. This difficulty was, to a great degree, overcome by staggering the single row of holes to make a zigzag row, as shown in Figure 8.

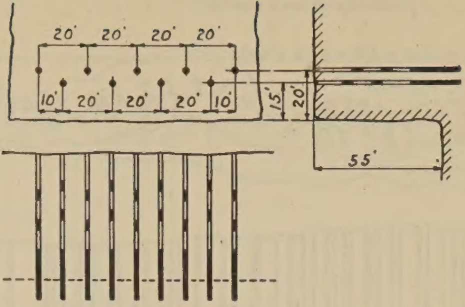


Fig. 8

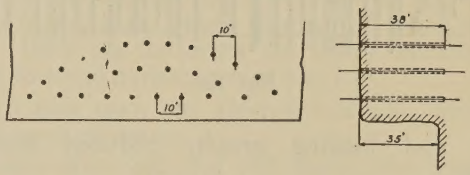


Fig. 9

At another quarry great difficulty was encountered in breaking the rock on the bottom, where it appeared to be harder than any other place. By drilling the holes as shown in Figure 9, most of this trouble was overcome. At still another quarry in hard limestone, better results were obtained by the system of drilling illustrated in Figure 10. The rows of holes farthest from the face were put down with well drills, and the charge concentrated near the bottom of the hole. Two rows of holes in front of this were tripod drilled and loaded so that the explosive came from halfway up to within 5 feet of the surface. This method of

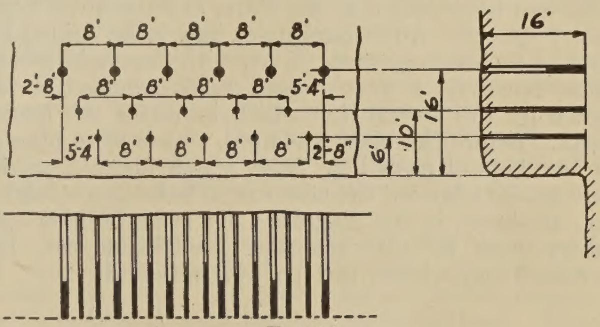


Fig. 10

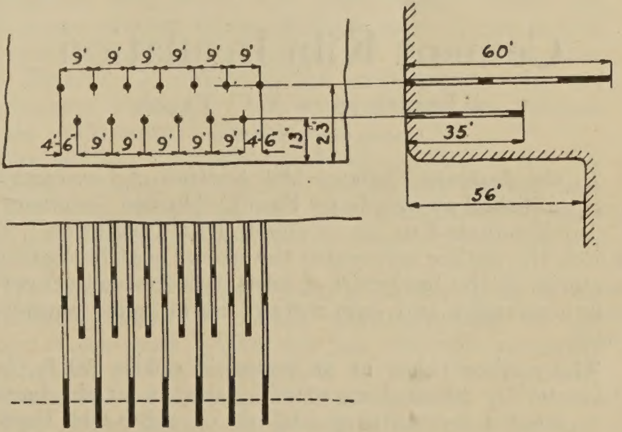


Fig. 11

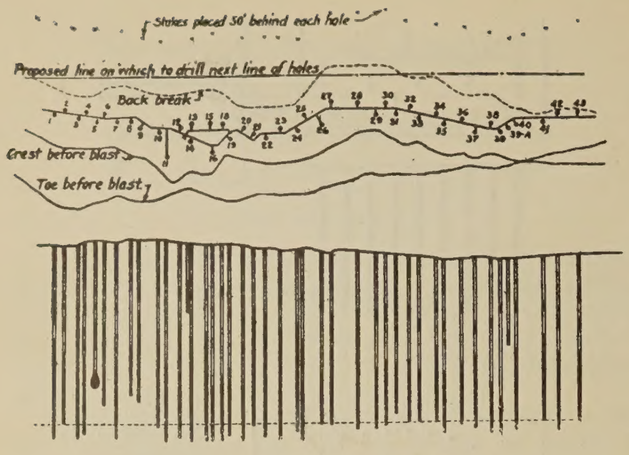

Stakes placed 50' behind each hole
Proposed line on which to drill next line of holes
Back break
Crest before blast
Toe before blast

Fig. 12

drilling and loading greatly reduced secondary blasting.

At a northern Ohio limestone quarry in hard, stratified limestone, it was found that when using ordinary drilling and loading methods much of the rock was not broken up into sizes convenient for handling. The system shown in Figure 11 was adopted to overcome this. The holes in the back row were drilled 60 feet deep, and those in front only 35 feet. The charge in the deep holes consisted of 150 lbs. of 40% straight nitroglycerin dynamite and 40% gelatin. The front holes were loaded with 50 lbs. of 40% straight nitroglycerin dynamite. The charges were spaced as shown in the diagram. After this method was adopted the proportion of large sizes was considerably reduced. When the quarry bank is ragged, such as that shown in Figure 12, the average cut which the steam shovel can take is lessened and the cost of production proportionately increased.

A straight bank, which permits the steam shovel to operate at uniform speed is, therefore, a great advantage. In the blast illustrated in Figure 12, insufficient holes had been drilled at the start, and the holes were poorly spaced. Additional holes had to be drilled to insure a satisfactory shot. Even with these additional holes, however, a very ragged bank resulted, as is shown by the dotted line which indicates the backbreak. Before the blast was fired, stakes were placed 50 feet behind each hole from which measurements were made to lay out the next row of holes in a straight line, as shown in the diagram. By straightening the quarry face in this manner, production can be increased and a lower cost per ton obtained.

Cement Kiln Insulation

A Letter from A. C. Tagge

Canada Cement Co., Ltd.

In the January Cement Mill Section of Concrete you published an article by Paul C. Durbin, engineer, Celite Products Co., on "Cement Kiln Insulation", in which the author advocates the use of heat insulating material in the back part of kilns in order to effect certain economies and gain certain advantages enumerated.

The author takes as an example a kiln 10 ft. in diameter by 200 ft. long of which 140 ft. at the back is insulated by putting 2½ in. of Sil-O-Cel brick between the fire-brick and the kiln shell. He calculates the radiation loss for this kiln when uninsulated and when thus insulated and finds a difference of 730 b. t. u. per sq. ft. per hour, which, for the insulated area, amounts to 3,209,080 b. t. u. per hour. He then converts this into equivalent coal at 12,000 b. t. u. per lb., and concludes that insulation in the back part of this kiln would save 956 tons of coal per year. At this rate the cement industry of the United States can save at least $1,000,000 per year in a very simple and easy way. The question is, however, can we really save fuel by this means and if so, how much.

That the proper insulation of the back part of the kiln reduces radiation losses and considerably increases the temperature of the exit gases is well established and there seems to be no doubt as to the economy of so doing where waste heat boilers are used; but where no boilers or other means of utilizing the heat of the exit gases are used the claim as to saving of fuel is very doubtful and, so far as I have been able to learn, is not supported by reliable test data. A number of cement companies have tried the scheme and some of them "think" or "believe" that they have saved fuel by it but the evidence is hardly sufficient to warrant the positive statements that have been made. Reliable data is not easy to get, as the design and operation of most cement plants is such that the manufacturer does not know from day to day how much coal is used or how much clinker is turned out by any particular kiln. Furthermore, the variation in quality of coal and in other factors affecting kiln economy are such that it would require carefully conducted tests over a considerable period of time to determine quantitatively the actual saving of coal, if any, by insulation.

If anyone has data supporting this contention it would certainly be of great interest and value to the cement industry.

Lime Manufacture a Chemical Industry

"Our aim has been to place the lime industry on the same footing as any other chemical industry. In the past it has, in this country [England], been treated more like the manufacture of bricks for example; and even in America it is only in recent years that it has risen to its proper place as the industry concerned in the manufacture of one of the most important chemical reagents."

The compliment which is so gracefully expressed by our British friend quoted above is well deserved by some of the American producers; but there are others who still lag far behind in their progress toward a better understanding of what chemical lime really is, what standards of composition and performance can be expected of it, and how most economically to produce the optimum quality. The statement really indicates only an important trend in this important industry. It is a trend that might be speeded up by greater chemical activity in lime manufacture without any detriment either to manufacturers or users.

The making of high-grade chemical lime at the lowest cost demands no little chemical engineering skill. He who neglects to recognize this fact will shortly find himself outdistanced by more progressive competitors. —*Chemical and Metallurgical Engineering.*

Cement Labels I Have Met—Part 3

By Charles W. Erdell

Bethlehem, Pa.

In presenting the third group of miniature cement label illustrations in this issue, it is hoped and believed that they will prove of much greater interest to you than the one hundred already shown. The ones illustrated in the February issue of Concrete represented such well-known brands, and are of such every-day occurrence, that the reader may not have been fully impressed with their value. However, his interest in the matter having been awakened, the March issue was looked forward to with much expectation, as it was intimated that some of the *old-timers* would make their appearance very soon. It was happily found convenient to incorporate upwards of twenty obsolete brands in the second group and it is hoped that the reader was amply rewarded. It would certainly be a hard matter for the writer to attempt to explain how all of these forgotten labels were procured, as surely some of them are very, very old and were, no doubt, *rare* specimens when the collection of labels was started.

Ye Olde Curiosity Shoppe

Some of the obsolete labels just referred to, and those appearing in this issue, have by this time become so old and unremembered that they justly deserve a place of honor in *Ye Olde Curiosity Shoppe*. Let us peep into this *olde shoppe* and view the relics of the early cement industry!

Can you not, in your mind's eye, visualize these things? Don't you remember the dome and bottle kilns and the heavy oaken plank on which the brick laden barrow was let down into the bowels of the kiln? That big, round object you see in the distance was not taken from King Tut's tomb, although it may be quite as old. It is a millstone which has been laid to rest with the other things it served so long and so well. That small collection of implements you see nearby represents the mud-workers' tools, such as shovels, cutting-knives, gauges, stampers, etc. That barrow with the high sides was used to transport the cracked coke to the kilns, and the large kettle by its side served to lower the coke into the kiln. A staunch vessel that was, indeed! Those long thin pieces of steel, and the shorter ones, too, were the drills once so commonly used in the quarries. The steam pipes along the sides of the room are the *hacks*, and those rows of *blocks* on the floor are the dry mud-bricks which are ready to be placed in the hacks. You ask me what is that little heap of yellowish material? That is *under-burned* clinker which was carefully sorted from the good clinker when the kiln was drawn. And so, as we gaze around this imaginary *shoppe* and see many out-of-date objects, let us give into its keeping the labels of the long ago. Let us, also, at some spare moment sit down in peace and quiet, and forgetting the hum of present-day machinery, endeavor to make a list of all the things to be found in this *olde shoppe*. Then, just as a matter of comparison, let us set down in another column the things we have with us now. Surprising, is it not?

As we turn to go upon our way a last object meets our view. It is the statue of The Thinker, done in snow-white cement! Can you tell what he is thinking about? Is it not possible that his thoughts dwell upon the toil and hardships that were the lot of the average cement man before the era of labor-saving devices? How can he forget the weary worker who was wont to wend his homeward way?

We will now turn our attention to the labels illustrated on these pages.

Note that Nos. 101 and 105 depict the ferocious *gulo* of the Northern States, and represent the Wolverine Portland Cement Co., Coldwater, Mich. The latter label, no doubt, has displaced the earlier one, No. 101, there being a slight change in the design. This company also had at one time an "Eclipse" brand, which may be shown later.

No. 102 needs no introduction, not even to the layman, as it represents one of the leviathans of the industry. The Atlas "White" brand was shown in the March collection.

The plumed warrior shown next is the emblem of the Petoskey Portland Cement Co., of Michigan, and is a comparatively new face in the cement world. This label, in its original colors, is probably the neatest one of those brands that use the American aborigines for their trade-mark.

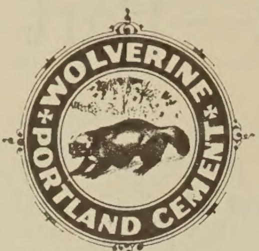
No. 104 is an innovation and is certainly a step in the right direction, emphasizing as it does to what uses concrete can be put for permanence and durability. This company's earlier label is shown in this collection as No. 152, which was also a neatly designed trade-mark. It might be interesting to the designers of the new "Concrete" label to know that the Brooklyn bridge was used as a cement trade-mark by the Consolidated Rosendale Cement Co., New York, in the old days. Its brand was called the "Brooklyn Bridge" Rosendale Hydraulic Cement, and it is hoped that this label can be reproduced shortly.

We will now cross the border and entering Canada will become acquainted with two of the Provincial producers. No. 106 is one of the few designs that embodies several features in the get-up. Here we have the brand *name* in heavy type, then the *monogram*, and finally the *object* itself. There are not many cement labels that are worked out in this artistic and striking manner. It is presumed that the British Columbia is the successor to the old Vancouver Company, whose label bore the likeness of the discoverer of the island.

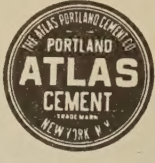
No. 107 is very similar in design to that of the Canadian Cement Company's trade-mark which was shown in a former issue. The Edmonton Cement Co., Ltd. has been succeeded by the Marlboro Cement Co.

The block "M" next shown is on the order of the Knickerbocker's "K" with the exception of the shape of the label. After one has become thoroughly acquainted with this label it is sure to be easily distinguished and remembered at a glance.

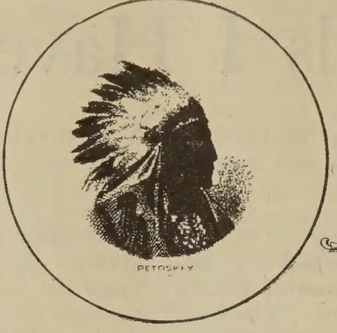
The state flower of Kansas adorns the label of the Kansas Portland Cement Co., and is a booster



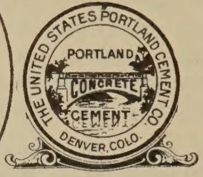
101



102



103



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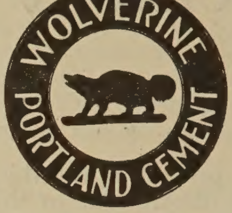

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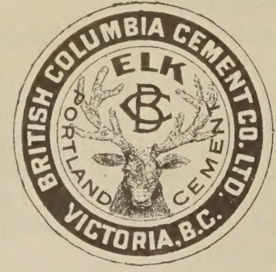

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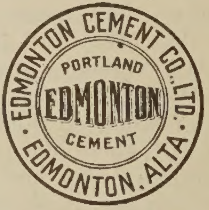
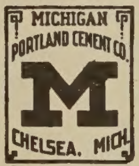
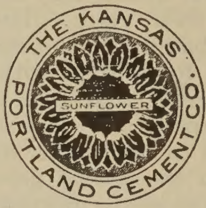


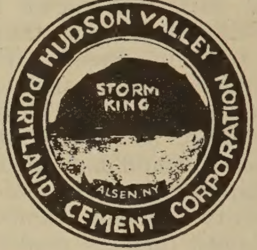
107


MICHIGAN
PORTLAND CEMENT CO.
M
CHELSEA, MICH.

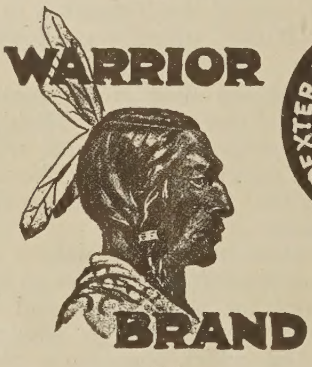
108



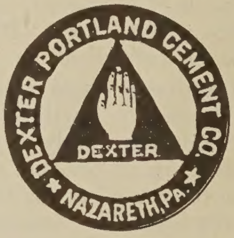
109



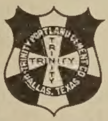
110



111


DEXTER PORTLAND CEMENT CO.
DEXTER
NAZARETH, PA.

112



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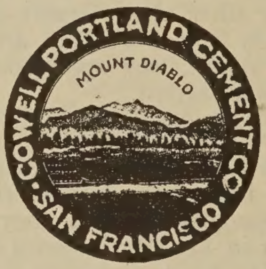
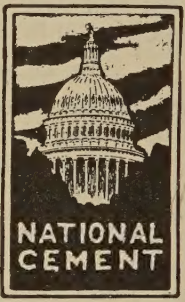

COWELL PORTLAND CEMENT CO.
MOUNT DIABLO
SAN FRANCISCO.

114



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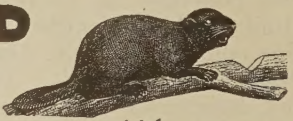

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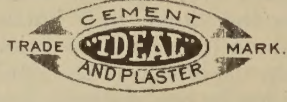
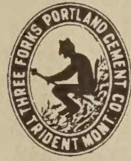


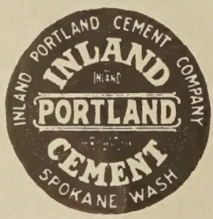
117

MONTANA

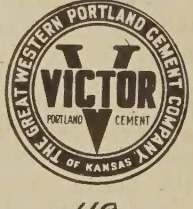

THREE FORKS PORTLAND CEMENT CO.
TRIDENT MONT.

"RED DEVIL"

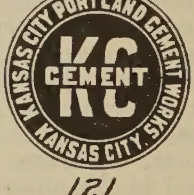
120



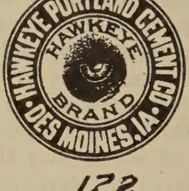
118


THE GREAT WESTERN PORTLAND CEMENT COMPANY
VICTOR
PORTLAND
CEMENT
OF KANSAS

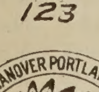
119.


KANSAS CITY PORTLAND CEMENT WORKS
KC
CEMENT
KANSAS CITY

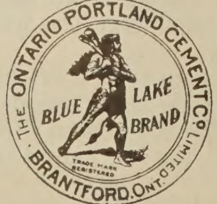
121


HAWKEYE PORTLAND CEMENT CO.
HAWKEYE
BRAND
DES MOINES, IA.

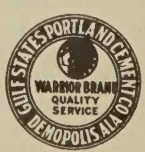
122



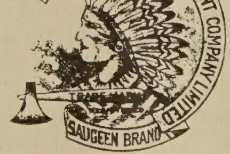
123



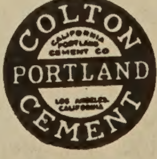
124



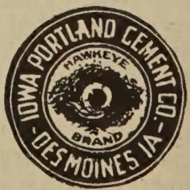
125


THE HANOVER PORTLAND CEMENT COMPANY LIMITED
TRADE MARK
SAUGEEN BRAND

126

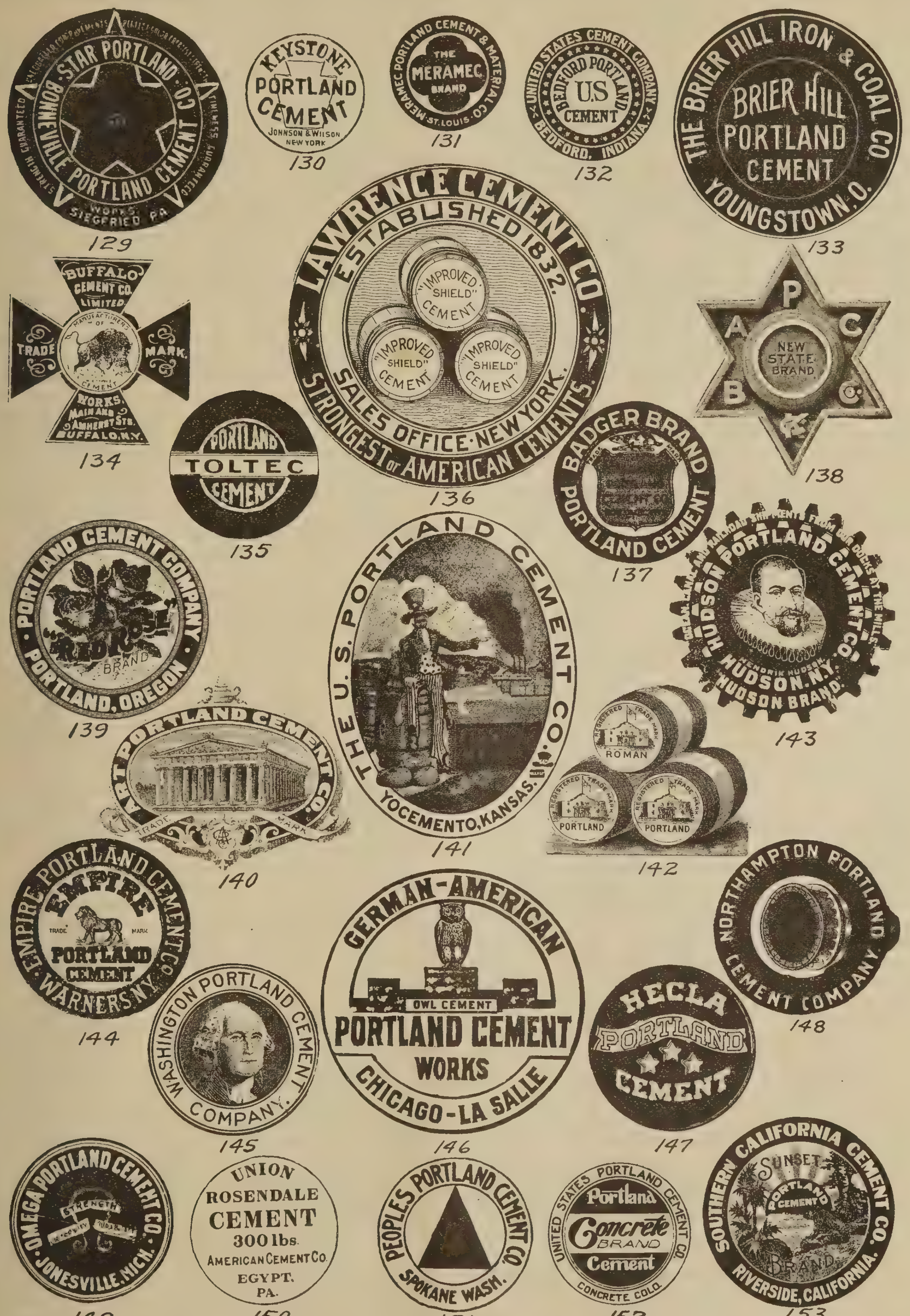


127


IOWA PORTLAND CEMENT CO.
HAWKEYE
BRAND
DES MOINES IA.

128

AMERICAN CEMENT LABELS



American Cement Labels

for company and commonwealth. The bright color of this label's flower is emblematic of the brave spirit that rules the heart and mind of every loyal Kansan. Long may the "sunflower turn to her god when he sets"!

No. 110 may cause us to shiver when we think of the possibilities of the real *storm king*. However, nothing has been heard of this company lately and it is likely that the plant has not as yet been put in operation.

No. 111 is an enlarged view of the warrior shown on the Gulf States label, No. 125. Note that this company advertises *quality* and *service*, the latter, no doubt, denoting the requisites of a well-organized shipper of the product.

Shake hands with the brand of the Dexter Portland Cement Co., one of the old Pennsylvania mills. This label, in a mute manner, tells us that its product is *right* and that more need not be said. The Dexter company is not alone in the use of the right hand for a trade-mark, as one of the Belgian manufacturers has also made use of it.

The Trinity company, in designing its trade-mark, took a red shield and a Greek cross and printed the label thereon. The shield has been used on numerous occasions on cement labels, the practice being to have the shield appear within the outer circle of the label. The Trinity label, therefore, is a departure from the ordinary form of shield-design labels.

In No. 114 we behold California's Mount Diablo and at its base a view of the busy plant of the Cowell company. There are only a few labels that are so beautifully colored as this one.

As you gaze upon the dome of the Capitol your attention is directed to a recently organized Michigan concern, which has not as yet commenced operations. There have been other "National" brands but none heretofore made use of the Nation's foremost edifice.

The beaver, next shown, is the busy little animal that inspires the organization of the Beaver Portland Cement Co., at Gold Hill, Ore. Evidently this company has not adopted a miniature label; it would have been very desirable to have had one for the collection.

There seems to be something missing on No. 117. The Colorado Portland Cement Company's "Ideal" brand is a familiar one, and the earlier design, I believe, depicted the human eye.

Referring to the next brand, No. 118: There are no other two labels on the market that are more similar in appearance and design than the "Inland" and the "Lehigh". They are practically identical, with the exception, of course, of the title name. This is explained by the fact that the Inland plant is operated by the Lehigh company.

The original design of the Great Western company has been materially altered, and in No. 119 we have an entirely new dress. The old label made use of the letters "G. W.", while the new one has the latest brand name shown thereon.

Here again, No. 120, we have Old Nick, who made his appearance in February with the Union company of Utah, and now he leads us over into Montana!

No. 121 is the obsolete brand of the old Kansas City company, which has been succeeded by the Missouri company, the latter's other trade-mark having been shown in February. The "K. C." is now enjoying the close affection of old-timer "Red Ring".

The Hawkeye State now comes forward and we *see* the brand of the new company in No. 122, and the old in No. 128.

The Santa Cruz label shown as No. 123 is the new design, the earlier label of this company having been shown in a previous issue.

The strength of the Ontario Portland Cement Company's product is evidenced by the appropriate design outlined in label No. 124. Goliath is ready for action.

No. 126 is another Canadian brand, and it appears that the Saugeen brave is prepared to defend his title, judging from the propinquity of his tomahawk.

No. 127 shows the California Portland Cement Company's "Colton" brand. The earlier label of this company was of a different design and used the letters "C. P. C." to denote the brand.

Turning to the next page of miniatures we unearth a veritable mine of obsolete and forgotten brands. How many of my readers are there who can remember all of them? It would be interesting to know this. Many of the trade-marks shown on this page have become obsolete due to the companies having been absorbed by other interests. The writer will do his utmost to relate the history, or passing of each label and if, perchance, an error is made, it is hoped that the *sin of commission* will be duly pardoned and the attention of the writer drawn to the incorrect statements.

The big red star outlined on the label of the old Bonneville Company lost its brilliancy nearly 20 years ago. This mill was located in the very heart of the famous Lehigh district, and was in close proximity to the present Lawrence company's plant. Various causes contributed to this company's demise.

The brand shown by No. 130 was a dealer's brand. I believe the cement was manufactured by the Atlas company in the mill at Coplay (which is not now operating), it being termed the "Keystone" Mill. It is quite probable that the dealers adopted this brand name on that account. This was, of course, many years ago. There are other instances where various brands of other companies were named for the different mills of the company.

The Meramec brand as shown by No. 131, although not obsolete, is not active at this time, as this company has temporarily discontinued the manufacture of cement, but is still engaged in its other lines.

No. 133 represents the obsolete label of the old "Brier Hill" product. If memory serves me correctly I would say that this was a puzzolan cement.

The Maltese Cross as shown by No. 134 was the somewhat distinctive trade-mark of the Buffalo Cement Co., whose product has been off the market a number of years.

No. 135 was the brand of the old Maryland Cement Co., Baltimore. We can only conjecture why this Mexican term was applied to a perfectly good American cement!

Survey the next has-been! Here we have three barrels, (900 lbs.) of that famous "improved" product that was so universally turned out in the days of old. On the lower portion of the label it is asserted that this is the *strongest of all American cements*. It is not believed that the originators of this label desired to make the sweeping claim that their *improved* natural cement was better than, or even as good as, the portland cement of their competitors. We must infer, therefore, that reference was had to natural cements only. Note especially the date established. For general information it should be stated that this label was obtained from the advertising section of a trade journal many years ago.

The "Badger" brand passed out of existence some time ago, and with its demise Wisconsin is left without an active cement plant.

Some years ago some Western promoters organized the British-American Portland Cement Co., Kansas City. This six-pointed star appeared on their letterhead, and I believe nothing ever materialized from the project.

In No. 139 we recognize another state flower, the Red Rose of Oregon. This was probably too fragile a flower to endure the rigors of the industry and now lies sere and dead.

The Parthenon, the Temple of Athena, is the symbol that was used by the Art Portland Cement Co., which engaged in the manufacture of white cement in the Buckeye State, but has been out of business a long period of time.

Uncle Sam was called upon to enhance the appearance of the label of the Yocemento (Kans.) outfit. Our poor old uncle evidently tired of sitting around all day on a barrel of cement and doing nothing in particular. One night, when the main lineshaft in the finish-grinding department snapped in two, he hopped off his perch and escaped in the darkness. For all that, Uncle Sam has shown the world how to produce this valuable stuff we call *portland cement.*

The three barrels next shown were the property of the Alamo Cement Co., San Antonio. The Alamo has been retained by the San Antonio Portland Cement Co. as its trade-mark. This latter label was shown in the preceding instalment.

Hendrik Hudson's name is a part of many American institutions, it having been bestowed upon municipalities, counties, river and bay. So, even with the passing of the old "Hudson" brand, we shall still have the name of Hudson with us, but the cement world misses an old-time, familiar face.

The Empire State lost its namesake company when the one at Warners passed out of existence.

The Washington Company changed names but not faces, and in No. 145 we have the old, the new design having made its appearance as that of the Superior company in the March installment.

The wise old owl is looking at you out of dreamy eyes. How was he to know, even in his wisdom, that some day he would be swallowed by a *giant?*

No. 147 shows the 3 star "Hecla" brand, Bay City, Mich. This trade-mark has been off the market upward of 20 years.

The creators of the "Northampton", Stockertown, Pa., took advantage of the opportunity to embody the rotary kiln in their design. This kiln ceased revolving years ago.

No. 149 has reached "the end" of its days. We have yet our "Alpha".

The old American Cement Co., makes its third appearance, and in No. 150 we have one of those old natural cements that gave up the ghost about 20 years ago. There still remain two other obsolete American brands to be shown, and this will be done provided it will be possible to reproduce them. They are the "Egypt" Portland and the "Improved Union" Rosendale brands.

For various reasons it has been impossible to keep track of all the labels that found their way into my collection. I find that the triangle brand of the Peoples Portland Cement Co., No. 151, is in this category. I am really at a loss to state whether the company represented by this label is a *has-been* or a *never-was.* At any rate, it is now absolete.

No. 153 portrays a California sunset. Those of you who can recall this label in its original colors will not be surprised at the fact that the bear in the foreground is fascinated as the *Sun sinks low in the West.* This trade-mark has long since experienced its last sunset.

Portland Cement Output In February

The statistics shown in the following table, prepared under the direction of Ernest F. Burchard, of the United States Geological Survey, are based mainly on reports of producers of portland cement but in part on estimates. The use of estimates was made necessary by the lack of returns from one producer.

Production, Shipments and Stocks of Finished Portland Cement in February, 1923, and Preceding Months

Month	Production (barrels)		Shipments (barrels)		Stocks at end of month (barrels)	
	1922	1923	1922	1923	1922a	1923
January	(a)4,291,000	7,704,000	(a)2,931,000	5,419,000	13,316,000	(a)11,470,000
February	4,278,000	8,085,000	3,285,000	5,963,000	14,142,000	13,592,000
March	6,685,000	....	7,002,000	....	13,848,000	....
1st quar.	15,254,000	....	13,218,000	....	....	....
April	9,243,000	....	8,592,000	....	14,470,000	....
May	11,176,000	....	12,749,000	....	12,893,000	....
June	11,245,000	....	13,470,000	....	10,718,000	....
2nd quar.	31,664,000	....	34,811,000	....	....	....
July	11,557,000	....	13,850,000	....	8,433,000	....
August	11,664,000	....	14,361,000	....	5,746,000	....
September	11,424,000	....	12,444,000	....	4,724,000	....
3rd quar.	34,645,000	....	40,655,000	....	....	....
October	12,287,000	....	12,854,000	....	4,149,000	....
November	11,349,000	....	10,167,000	....	5,320,000	....
December	8,671,000	....	4,858,000	....	9,142,000	....
4th quar.	32,307,000	....	27,879,000	....	....	....
	113,870,000	....	116,563,000	....	....	....

(a) Revised.

Stocks of clinker, or unground cement, at the mills at the end of February amounted to about 4,586,000 barrels compared with 4,015,000 barrels (revised) at the beginning of the month.

The favorable showing of the cement manufacturing industry in the first two months of 1923 is worthy of comment. As compared with the corresponding period of 1922 production and shipments of portland cement made gains of about 84% and 83%, respectively, and stocks, which are nearly as high as early in 1922, are maintaining adequate levels thus far in 1923.

The Bureau of Foreign and Domestic Commerce, of the Department of Commerce, reports that the imports of hydraulic cement in November, 1922, amounted to 61,010 barrels, valued at $104,688. The total imports in 1921 amounted to 122,317 barrels, valued at $388,828. The imports in November were, from Denmark, 36,853 barrels; Canada, 19,129 barrels; Belgium, 4,003 barrels; France, 1,025 barrels. The imports were received in the following districts: Porto Rico, 23,740 barrels; Vermont, 15,805 barrels; North Carolina, 14,923 barrels; San Francisco, 5,028 barrels; Washington, 900 barrels; St. Lawrence, 459 barrels; other districts, 155 barrels.

Imports and Exports of Hydraulic Cement, by Months, in 1922 and 1923 (a)

Month	Imports (barrels)		Exports (barrels)	
	1922	1923	1922	1923
January	17,036	(b)	70,725	73,169
February	5,157	(b)	82,421	(b)
March	1,597	....	103,556	....
April	10,855	....	75,412	....
May	2,521	....	100,068	....
June	14,179	....	96,263	....
July	958	....	119,491	....
August	56,757	....	105,156	....
September	(c)42,641	....	78,615	....
October	(d)65,228	....	80,402	....
November	61,010	....	108,798	....
December	(b)	....	106,938	....
	....	....	1,127,845	....

(a) Compiled from records of the Bureau of Foreign and Domestic Commerce.

(b) Imports in December, 1922, and in January and February, 1923, and exports in February, 1923, are not available.

(c) Imported during period September 1-21, inclusive. Imports during period September 22-30 are included with October.

(d) Includes imports during period September 22-30.

The Rockcastle Cement and Lime Co. to Expand

After lying idle for about eight years, the property known as Pine Hill at Pine Hill station, Rockcastle County, Ky., is about to be developed as a lime, cement and clay products proposition. To those who know this property it has been a matter of surprise that possessing as it does such obvious advantages and owned by such financially strong people, it should have been allowed to remain undeveloped as long as it has. It is a very large property of about 2,000 acres, and contains practically inexhaustible deposits of limestone, shale, fire-clay and either actually on the property or geographically controlled by it are several million tons of fine semi-cannel coal. There is water on the place for extensive manufacturing operations and large tracts of timber.

It now transpires, however, that the owners of Pine Hill have not been neglecting or overlooking their property. Further investigations of all raw materials have been carried on both in the laboratory and by having produced in practical form from these raw materials lime, cement, hollow building-tile, sewer-pipe and face-brick. These, it appears, have all been submitted to experts in the different lines, but more practical yet to architects, contractors, building materials men and users generally of their anticipated products. Exhaustive surveys have been made of the markets for their materials, and when they were satisfied that all the fundamentals of their proposition were sound and that the business recovery in the different lines in which they are interested warranted the large investment required, work was commenced to put their plans in effect.

The first step was to recondition the lime plant, which was built on their property in 1912. This work was commenced on Jan. 1, 1922. All obsolete machinery was torn out and the plant was brought up to date in every particular. In anticipation of the heavy traffic it would have to carry, their short railroad from the L. & N. main line into their property was constructed to carry the heaviest locomotives of that road. Ninety-five pound rails, close ties and the best of grading were used. Their lime plant has now been running for about six months, and is expected will be selling to capacity this spring. Plans are now being perfected to add five additional 16-ton kilns to the lime plant, which with the existing five kilns will balance the hydrating capacity. Plans too are being matured for a portland cement plant with a capacity of one million barrels per annum and also a clay products plant to manufacture hollow building-tile, sewer-pipe and face-brick with a capacity of about 150 tons per day.

Richard K. Meade of Baltimore, Md., is the consulting engineer of the company and is in general charge of the engineering and construction work.

This company will inaugurate a new departure in sales development. Immediately construction work commences on the cement and clay products units, sales offices will be opened in Cincinnati, Louisville and Knoxville with samples on display of its actual products in each office. An immense amount of work has already been done in the matter of getting freight rates established from Pine Hill to points in the broad field it is expected to cover, so that with the opening of the sales offices, intelligent business relations can be established with the buyers in all of their territory. Spot deliveries can of course be made on lime up to the present capacity, which it is anticipated will be much more than doubled in the current year. With these plans all in effect, the company believes that with its low cost of production and favorable freight rates to Louisville, Cincinnati and Knoxville, by making gateways of these points, it will get its full share of the business done.

Cement will be the leader as it is the largest unit and negotiations are practically concluded with one of the most successful operating men in the country to take care of the cement plant. The same may be said of its sales manager and other plant managers. No experiments will be tried by the company in either men, materials or equipment.

The Rockcastle Cement & Lime Co. is practically owned by a strong group of bankers and capitalists in Baltimore, so the usual financial difficulties may not be anticipated. It is expected that this company's property with all the units referred to will be in full operation in about one and a half to two years.

LIME PLANT OF ROCKCASTLE CEMENT AND LIME CO. RECENTLY BROUGHT UP TO DATE

To Whom am I Responsible?

For what am I responsible? What is the Order and Sequence of Responsibility?

BY PAUL BOWERS.

A man to serve can serve well only when he has clear conception of the answer to the above question.

To this end, the accompanying organization chart of the Luckey Lime and Supply Co., which is used in connection with a manual of Standard Practices, is dedicated.

In this Standard Practice manual, the "how", "when" and "why" of everything that is done in the office, is explained in detail. This makes it very easy to keep the organization intact and running smoothly in case one of the staff should resign or be taken ill for any great length of time.

The hardest part of ging to a new position is to be able to know what to do, and then after you have done it, the wondering if it has been done right. With this manual, no one need remember anything but the kind of duties assigned him and by referring to the index of the manual can find out the way his duties are performed. He can go ahead with the feeling that he is doing things according to fixed rules and if he does not do them that way he is leaving himself open to criticism.

The title page of this manual gives the names of three departments of the organization, *financing*, *producing* and *selling*. It also gives the names of the officers and directors and the names and titles of the various employes. The various employes are given titles because it not only enables them to properly sign their letters, but more definitely allocates them in regard to their duties.

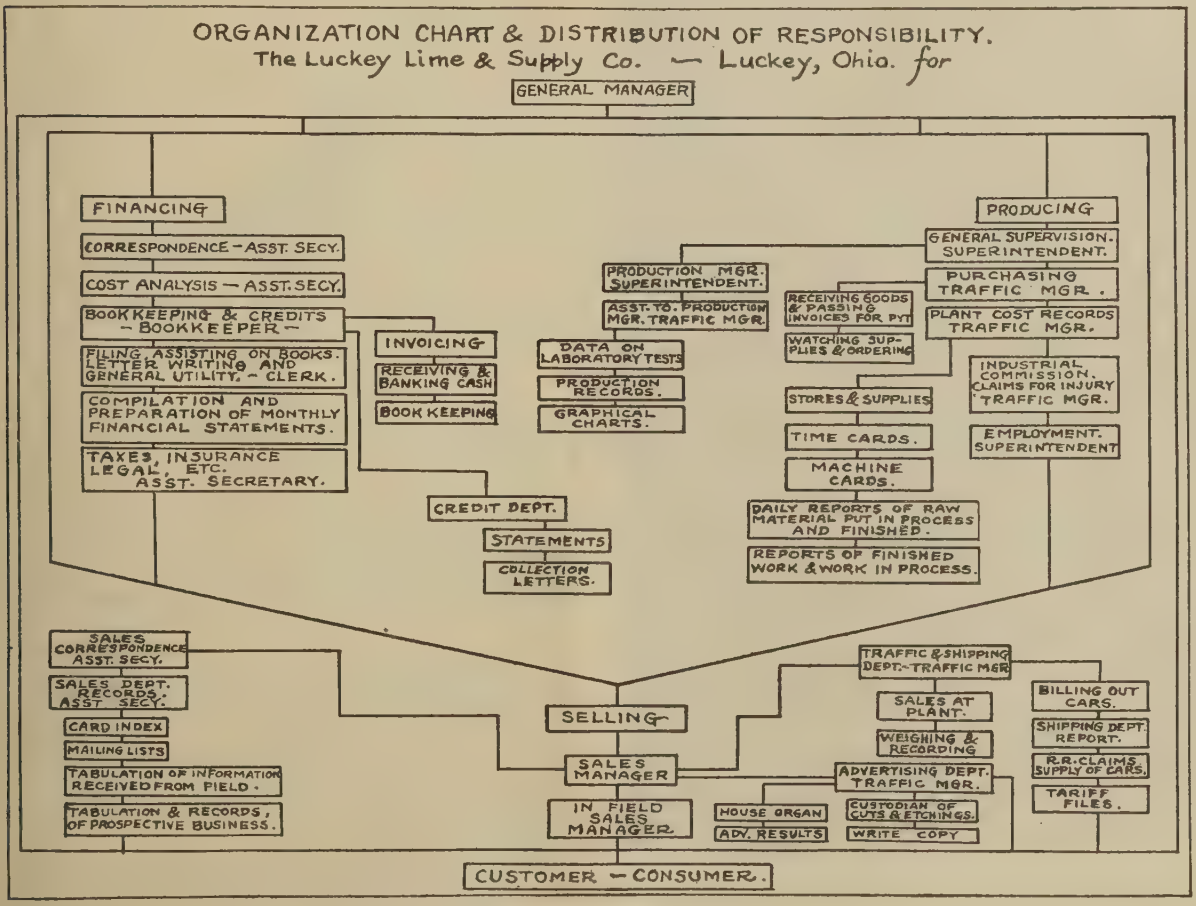
Page 2 of our manual contains the organization chart and page 3 the chart of accounts. Then comes a section containing general information.

Next is the section for the producing department, in which section all the details of the various duties outlined on the organization chart are explained. Topic headings in this section are: "Duties of the Clerk in the Office of the Superintendent", "Payroll Schedule", "Computing Payroll", "Receiving and Checking Goods", "Passing Invoices for Payment", "How to make out Factory Reports", "How to File Claims for the Industrial Commission", etc.

The section covering the financing is next and contains the following topic headings: "General Correspondence", which includes the various form letters used; "Invoicing", "Entering in Books of Original Entry", "Checking of Statements from Purchase Creditors against Our Accounts Payable Ledger", "Acknowledging Orders", "Receiving and Banking Cash Receipts", "Credit Department", including the routine to be followed in making statements and a series of 8 form collection letters.

The selling section covers the form sales letters used, methods of tabulating information received from the field, duties of the shipping clerk and traffic manager and the duties of the advertising manager.

We are very proud of the service we are rendering our customers and feel that it is the result of having our activities well organized and understood by every employe.


ORGANIZATION CHART & DISTRIBUTION OF RESPONSIBILITY.
The Luckey Lime & Supply Co. — Luckey, Ohio. for
GENERAL MANAGER
FINANCING
CORRESPONDENCE - ASST. SECY.
COST ANALYSIS — ASST. SECY.
BOOKKEEPING & CREDITS - BOOKKEEPER -
FILING, ASSISTING ON BOOKS. LETTER WRITING AND GENERAL UTILITY. - CLERK.
COMPILATION AND PREPARATION OF MONTHLY FINANCIAL STATEMENTS.
TAXES, INSURANCE LEGAL, ETC. ASST. SECRETARY.
INVOICING
RECEIVING & BANKING CASH
BOOK KEEPING
CREDIT DEPT.
STATEMENTS
COLLECTION LETTERS.
PRODUCING
GENERAL SUPERVISION. SUPERINTENDENT.
PRODUCTION MGR. SUPERINTENDENT.
ASST. TO. PRODUCTION MGR. TRAFFIC MGR.
DATA ON LABORATORY TESTS
PRODUCTION RECORDS.
GRAPHICAL CHARTS.
PURCHASING TRAFFIC MGR.
RECEIVING GOODS & PASSING INVOICES FOR PYT
WATCHING SUPPLIES & ORDERING
PLANT COST RECORDS TRAFFIC MGR.
STORES & SUPPLIES
TIME CARDS.
MACHINE CARDS.
DAILY REPORTS OF RAW MATERIAL PUT IN PROCESS AND FINISHED.
REPORTS OF FINISHED WORK & WORK IN PROCESS.
INDUSTRIAL COMMISSION. CLAIMS FOR INJURY TRAFFIC MGR.
EMPLOYMENT. SUPERINTENDENT
SELLING
SALES MANAGER
IN FIELD SALES MANAGER
SALES CORRESPONDENCE ASST. SECY.
SALES DEPT. RECORDS. ASST SECY.
CARD INDEX
MAILING LISTS
TABULATION OF INFORMATION RECEIVED FROM FIELD.
TABULATION & RECORDS, OF PROSPECTIVE BUSINESS.
TRAFFIC & SHIPPING DEPT. - TRAFFIC MGR
SALES AT PLANT.
WEIGHING & RECORDING
BILLING OUT CARS.
SHIPPING DEPT. REPORT.
R.R. CLAIMS SUPPLY OF CARS.
TARIFF FILES.
ADVERTISING DEPT. TRAFFIC MGR.
HOUSE ORGAN
ADV. RESULTS
CUSTODIAN OF CUTS & ETCHINGS.
WRITE COPY
CUSTOMER — CONSUMER.

Progress in Chain Drives for Cement Mill

A new all-steel bushed roller chain, No. SS-40, which operates on the standard No. 103 sprocket wheels, has been put out by the Link-Belt Co., of Chicago.

No. SS-40 has close-fitting but freely-revolving rollers. This eliminates the rubbing of the chain going on and off the teeth and rims of the wheels, greatly reducing the friction and wear (which is unavoidable with links cast solid). In the presence of abrasive material, which gets between the sprocket wheel and the chain, rollers are especially needed, because the chain with rollers comes to a seat on the sprocket without any sliding action.

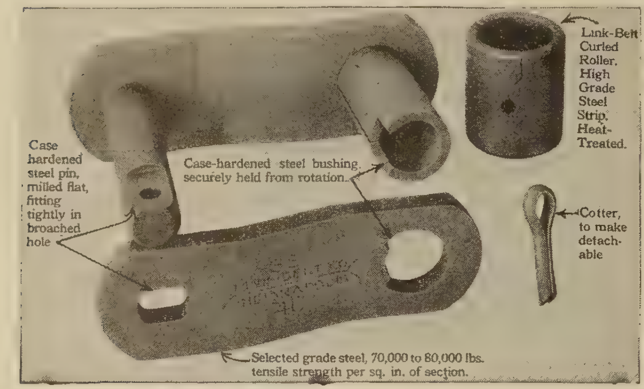

Link-Belt Curled Roller, High Grade Steel Strip, Heat-Treated.
Case hardened steel pin, milled flat, fitting tightly in broached hole
Case-hardened steel bushing securely held from rotation.
Cotter, to make detachable
Selected grade steel, 70,000 to 80,000 lbs. tensile strength per sq. in. of section.

Fig. 1—Parts of Link Belt No. SS-40 Chain Link

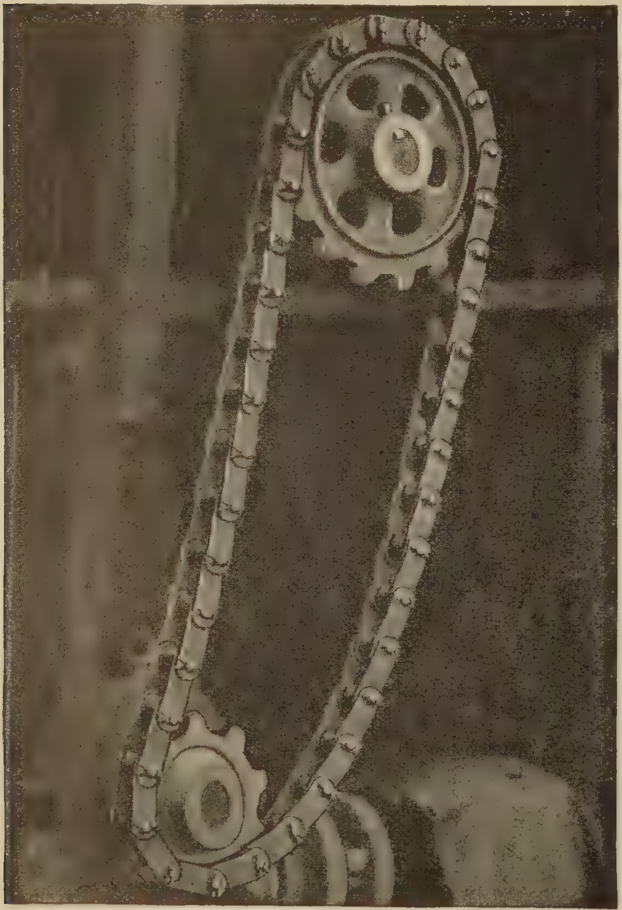


Fig. 2—Link-Belt No. SS-40 Driving from Worm Gear Speed Reducer to 12-in. Screw Conveyor, at 55 R. P. M., in Cement Mill

No. SS-40 chain has rolled steel side bars, made exactly to pitch, case-hardened smooth finished pins, and case-hardened smooth bushings securely held in the side bars, making smooth, close-fitting joints, with hard long-wearing surfaces as shown in the illustration of the various parts of the link.

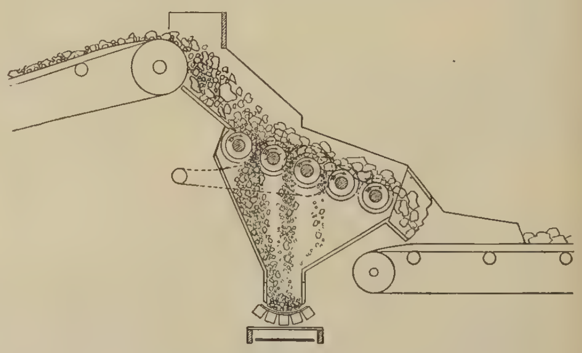
The latest improvement is the adoption on the No. SS-40 chain, of the Link-Belt curled roller, which has been successfully used for a long time on the higher priced, high speed roller chains, such as are used on trucks, tractors, etc.

The combination of this all-steel roller chain with accurately fitted Link-Belt Flint-Rim wheels, gives a long life to the drive. This has been demonstrated by practical experience in many cement mills, and other locations where drives are exposed to abrasive materials, thus reducing maintenance charges and costly shut-downs.

The Robins Cataract Grizzly

The Robins Cataract Grizzly, the operating principle of which is shown in the accompanying illustration, consists of a series of shafts set on a structural steel base, on which shafts are mounted heavy chilled iron discs of such shape that the screening surface composed of these discs contains a large number of openings of the exact size of the desired separation. These shafts are power driven, the main drive being connected with the center shaft and each of the other grizzly shafts receiving its power from the center shaft through chain and sprocket transmission.

The shafts all revolve in the direction of flow of the material, driven at different speeds. The screen should be installed at an angle of 23° with the horizontal, with the shaft at the top revolving at the lowest speed.



Sectional View Showing Principle of Operation of the Robins Cataract Grizzly.

As the material passes over the grizzly, each suceeding shaft is turning faster than the one behind it, the shaft at the bottom of the screen turning the fastest of all.

The regulation of the speed of each shaft with relation to the preceding shaft, together with the angle at which the screens are set, is the principle depended upon to prevent material from lodging in the screen openings or in the valleys between the shafts, the upward force applied to any individual lump being greater than the downward force imparted to it by the shaft behind.

The screen presents an effective screening area across its entire surface, designed to handle very large tonnages of material at a high rate of efficiency.

Men and Mills

Notes from the Field

The formation of the Southeastern Portland Cement Co. with a capital stock of $3,000,000, with headquarters in Macon, Ga., and a plant located at Ainslie, 28 miles south of Macon has been announced in Macon, Ga. W. Jordan Massee, Macon, is president of the newly formed company.

When established, the plant will be a big factor in supplying the increasing demand for portland cement in that district.

Other officers of the new company mentioned are: John T. Moore, former mayor of Macon, chairman of the board of directors; George P. Dieckmann, chemical engineer, formerly connected with the Gulf States Portland Cement Co., vice-president and general manager; E. E. Satterfield, is secretary and treasurer and E. B. Weatherly is general counsel.

The directors of the company include all of the officers and H. O. Reeve, manager of the farm load department, Atlanta Trust Co., and George H. West of the West Lumber Co., Atlanta. Financing of the company is in the hands of Porter D. Askes.

Gross receipts of $2,471,430 are shown in the annual report of the Giant Portland Cement Co. The net profits were reduced to $24,265, a decrease of $124,900.

The International Cement Corporation declared a quarterly dividend of 75c a share on common and $1.75 on preferred, stock, payable March 31.

A bill assuring the state of New Jersey of having its own cement plant in conformity with Governor Silzer's plan has passed the State Senate. The bill permits the Highway Commission to acquire a cement plant.

Improvements estimated to cost over a million dollars are being made at the plants of the Alpha Portland Cement Co. in line with the established policy of the company to keep its plants strictly up-to-date and modern from an engineering point of view. Among the important improvements being made are the changes at the Martin's Creek plant including the installation of a waste heat boiler plant and a new power plant.

A large force of workmen are reported employed on construction work and it is anticipated that the improvements will be completed before the end of the present year.

The high rate charged for power by the Pennsylvania Power & Light Co. from which the Alpha company buys its power is given as the reason for the radical changes in the power system at the No. 4 Martin's Creek plant.

That the plants of the Wolverine Portland Cement Co., at Coldwater and Quincy, Mich., would start operations again in March was the expectation of employes of the company at Quincy.

John Gleave, office manager for the Olympic Portland Cement Co. at Bellingham, Wash., has left for a trip to England, France and Italy, accompanied by Mrs. Gleave. They expect to be absent from this country about three months.

W. R. Bendy formerly connected with the engineering department of the Superior Portland Cement Co., Concrete, Wash., has accepted a position as assistant engineer in the Conservation Bureau of the Portland Cement Association and will be located at the association's office in Chicago.

The stockholders of the Dexter Concrete Co., at their annual meeting at Nazareth in January, elected the following directors for the ensuing year: John A. Miller, Joseph Brobston, Owen Hess, Erwin Snyder, Ambrose Tompkins, E. B. Wire and Herbert C. Cawley.

The board organized by electing the following officers: John A. Miller, president; E. B. Wire, vice president; Joseph Brobston, treasurer; Owen Hess, secretary; and Erwin Snyder, general manager.

The protest of the Atlas Portland Cement Co. against rates charged by the Central Railroad of New Jersey on cement from the Atlas mill at Navarro, Pa., to New Jersey points has been overruled by the Interstate Commerce Commission. The commission found that the rates on cement, in carloads from Navarro to certain points in northern New Jersey, between Navarro and New Jersey tidewater points, and to the latter for local delivery, are not unreasonable or otherwise unlawful. The Atlas company assailed the rates as unreasonable and in violation of the long-and-short-haul provision of the Interstate Commerce Act. Fourteen other cement companies in the Lehigh cement district intervened in opposition to the complaint.

Fifteen men employed as riggers at the Alpha Portland Cement Co.'s plant No. 4 at Martin's Creek are reported to have gone on a strike recently when their request for an increase of wages from 44 cents to 63 cents an hour was refused. After being out several days the men still refused to go to work unless their demands were granted.

The Lehigh Navigation Electric Co. is arranging the construction of a transmission line from its high tension line to Egypt, Pa., with a view to supplying electric current to cement mills in that locality. It is planned to use heavy poles instead of the customary steel structures to support the line.

The Columbia Chemical Division, Limestone Products Department, of the Pittsburgh Plate Glass Co., will use the following Fuller-Lehigh equipment in its new cement plant under construction at Zanesville, O.: one 4-ft. 6-in. x 42-ft. indirect fired dryer; two 46-in. Fuller-Lehigh gear mills for pulverizing coal; and one Fuller-Kinyon conveying system for pumping the pulverized coal from the mills to the bins, a distance of approximately 250 ft.

This conveying system will be electro-pneumatically operated and it will be possible for the coal mill operator to control the flow of material to any service bin from his station in the coalhouse, and he will be constantly advised of the amount of fuel in each bin by a series of electric signals automatically operating between the individual bins and the coal preparation room.

The Standard Conveyor Co., North St. Paul, Minn., has acquired all the rights to the "Brown Portable" line of portable equipment including sectional piling, elevating, conveying, loading and unloading machinery for handling packed and loose materials. The Standard Conveyor Co. will continue to operate the branch at North Chicago as formerly operated by the Brown Portable Conveying Machinery Co.

Plans for the construction of a cement warehouse at Mildred, Kansas, by the Great Western Portland Cement Co., have been announced. The structure will have a capacity of 200,000 bbls. of cement and will be of reinforced concrete and steel construction. This is being arranged in view of the building activities in Kansas City and surrounding points.

Arrangements have been made for a hearing before the Public Service Commission of Oregon on the application of the Sun Portland Cement Co., and the Union Pacific Railway System for a 15c rate on cement from Lime, Ore., to Portland, the chief market and distributing point of the cement used for construction purposes.

It is anticipated that cement will be on the market late next summer at the plant of the Sun company and it is desired to have a transportation rate into Portland that will be competitive with cement shipped in from California.

Howard Betts has resigned as chief engineer at the Alpha Cement Co.'s plant at Catskill, N. Y., and accepted a position on J. P. Morgan's yacht, the Corsair, where he was employed for three years previous to the World War.

The plant of the Tidewater Portland Cement Co., Union Bridge, Md., closed down early in March for a short period of time in order that some necessary repairs might be made.

The Bellingham chapter of the American Association of Engineers recently made a trip through the Olympic Portland Cement Co.'s plant and listened to an address by A. F. Krabbe, superintendent of the company at the cement company's office, the subject being, "The Manufacture of Cement".

The incorporation of the Kerr Portland Cement Co., Wheeling, West Va., with a capital of $3,500,000 is reported from Wilmington, Del.

Complete manufacturing operations were being resumed at the plant of the Peerless Portland Cement Co. at Union City, early in March. Marl from Spring Arbor and clay from the beds south of Union City were being received and the kilns were put in operation March 1. As this is an early start, a long and successful season is anticipated.

The portland cement plant of the Louisville Cement Co., was started in full operation late in January. It was reported that due to the fine weather good time was made on the winter repair work, the kilns being out of operation only 19 days. Two of the kilns were given a lining of Sil-O-Cel. Other important improvements were made in the engine room and foundations installed for the new turbine during the shut-down.

The state cement commission of South Dakota has awarded contracts for equipment for the state cement plant at Rapid City, according to a report from Pierre, S. D. The boiler contract was awarded to Babcock & Wilcox Co., New York and the contract for the cement mill machinery was awarded to the Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

Paul S. Steward has been named as assistant secretary and Josephine Crimmins assistant treasurer of the Signal Mountain Portland Cement Co., 1026 James Bldg., Chattanooga, Tenn.

The Olympic Portland Cement Co.'s 2,000-bbl. plant will be put in operation at full blast early in April. It has been running at half capacity since early in the year. In March the company made a shipment of 4,000 bbls. of cement to Honolulu and reports a promising market in the West.

An office of the Monolith Portland Cement Co. of California has been opened at 516 Pittock block, Portland, Ore., with a view to making Portland the distributing point for that company's product in the Pacific Northwest. W. C. Horan has been appointed manager of the local branch. Arrangements have just been completed by the Monolith company for enlarging its factory and with this expansion will be able to turn out 3000 bbls. of cement daily.

The death of Rev. J. H. Morron of Peoria, Ill. father of John R. Morron, president of the Atlas Portland Cement Co. was recently announced in the *Chicago American.* His death, which came at the age of 83 was caused by pneumonia.

CAPABLE CEMENT CHEMIST with six years experience in the chemical end of manufacturing cement, desires change of position. A-1 references. Box 1452, c/o CONCRETE, 1807 E. Grand Blvd., Detroit, Mich.

WANTED—Mill Edition of CONCRETE back numbers, long run preferred. Apply, stating price, to Box No. 1471, c/o CONCRETE, 1807 E. Grand Blvd., Detroit, Mich.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST, 24, 1912.

Of Cement Mill Edition of CONCRETE, publihsed monthly at Detroit, Michigan, for April, 1923.

State of Michigan, } ss.
County of Wayne, }

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared R. Marshall, who, having been duly sworn according to law, deposes and says that he is the General Manager of the Cement Mill Edition of CONCRETE, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Concrete-Cement Age Pub. Co., Detroit, Mich.
President—R. Marshall, Detroit, Mich.
Managing Editor—Harvey Whipple, Detroit, Mich.
General Manager—R. Marshall, Detroit, Mich.

2. That the owners are (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock)

Concrete-Cement Age Pub. Co., 1807 E. Grand Blvd., Detroit, Mich.
R. Marshall, 1807 E. Grand Blvd., Detroit, Mich.
Harvey Whipple, 1807 E. Grand Blvd., Detroit, Mich.
F. F. Lincoln, Room 1205, Broadway, New York City.
R. N. Jackson, 1807 E. Grand Blvd., Detroit, Mich.
R. W. Lesley, Pennsylvania Bldg., Philadelphia, Pa.
Edward B. Bruce, Manila, P. I.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortagges, or other securities, are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for which such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers, during the six months preceding the date shown above is ———. (This information is required from daily publications only.)

R. MARSHALL,
Manager.

Sworn to and subscribed to before me this 28th day of March, 1923.

(Seal.) IONE MICHAEL.

(My commission expires April 9, 1923.)

Cement Labels I Have Met—Part 4

By Charles W. Erdell
Bethlehem, Pa.

In presenting this (the fourth) group of miniature cement labels, representing 116 brands of the United States and Canada, we desire to crave your indulgence insofar as the sizes of the reproduced labels are concerned. It has become expedient for the publishers to reduce the trade-marks somewhat, in order that a greater number of them could be published at one time and thus provide more space for other topics of timely interest to the cement world. With this in view, therefore, the labels shown in this issue have been so arranged and grouped that all of the remaining available American and Canadian brands have been used up, and this issue of Concrete concludes the presentation of the brands of these two countries.

It is hoped that each and every brand shown will receive its due amount of scrutiny by our busy readers, although it is appreciated that some of the brands have been much reduced in size. There will probably never again be such an opportunity for you to become acquainted with these trade-marks, as most of the ones in this group are obsolete. It is felt, therefore, that a few more minutes of your time in glancing over these reproductions will be well worth your while.

Labels Not Reproduced

A few words will be in order at this time to make proper mention of the fact that it was found impossible for the publishers to reproduce all of the American and Canadian brands. To those unfamiliar with printing methods it should be stated that to reproduce these labels it was necessary that the colors of the various labels were set off in such a manner that there was the proper amount of contrast in order to make a good photographic copy. Thus, it happens that out of the total 300 American and Canadian labels at hand, it was impracticable to reproduce about thirty of them, or 10% of the total. The majority of the ones which it was impossible to show is composed of obsolete brands and it is felt that these *old-timers* will not be so very greatly missed. However, it is very much regretted that several of the present-day active companies are not represented, due to the fact that the color scheme of the label prohibited the making of a good photographic copy. The editors of Concrete join the writer in expressing their sincere regrets that it was necessary to eliminate a few of these brands. The reproduction of so many labels, comprising such a variety of designs and colors, is no small task, and much time and labor have been put forth by the publisher to accomplish the purpose of showing every label possible.

Foreign Labels

In the next issue of Concrete will appear the first installment of reproduced foreign labels. It is impossible to state at this writing which country's brands will make the first appearance. It will, naturally, depend upon circumstances, but we do wish to point out the fact that these foreign labels will prove to be very interesting and worth-while, and all of those interested in this matter will do well to make certain that the succeeding issues of this publication are brought to their attention. It might be well to say just a few words with reference to the labels of the foreign countries, in order to impress their full value upon the reader. The manufacturers of Europe have made lavish use of things that are old in the *get-up* of their brands. Heraldry, history, mythology, the animal kingdom, etc., have been freely drawn upon to furnish trade-marks for their products. As a rule these cement manufacturers cling to the old order of things, while we here endeavor to keep abreast of the times and create our brands accordingly. Space does not permit a proper comparison of the labels of this country and those of Europe, but close followers of these articles will be amply rewarded and can see for themselves the difference that exists in the labels. A rather close study of the labels of the different countries will reveal the fact that some of the designs adopted by some of the American companies can be traced back to foreign countries. And then again the same holds true of a number of the trade-marks of the European countries. But, as mentioned before and taking the collection as a whole, the line can easily be drawn between the brands of the various countries. A summary of the brands of foreign countries to be shown follows:

Germany	121	Wales	2
Belgium	71	Scotland	1
England	51	Ireland	1
France	13	Switzerland	1
Sweden	9	Rumania	1
Denmark	6	Italy	1
Japan	4	Africa	1
Austria	3	New Zealand	1
Spain	3	Mexico	1
China	2	Norway	1
Cuba	2		

Dealers' Trade-marks

In describing the labels reproduced on these pages lack of space will prevent mention being made of each one. The writer will endeavor to do the utmost to point out the labels of companies that were active, and to make proper mention of such labels that represented companies that were organized but never erected a plant. There are, also, quite a number of brands that were dealers' trade-marks only, and these should not be confused with any of the present-day brands that may happen to have the same trade name.

No. 154 represents a plant that operated some years ago, but this trade-mark is now obsolete.

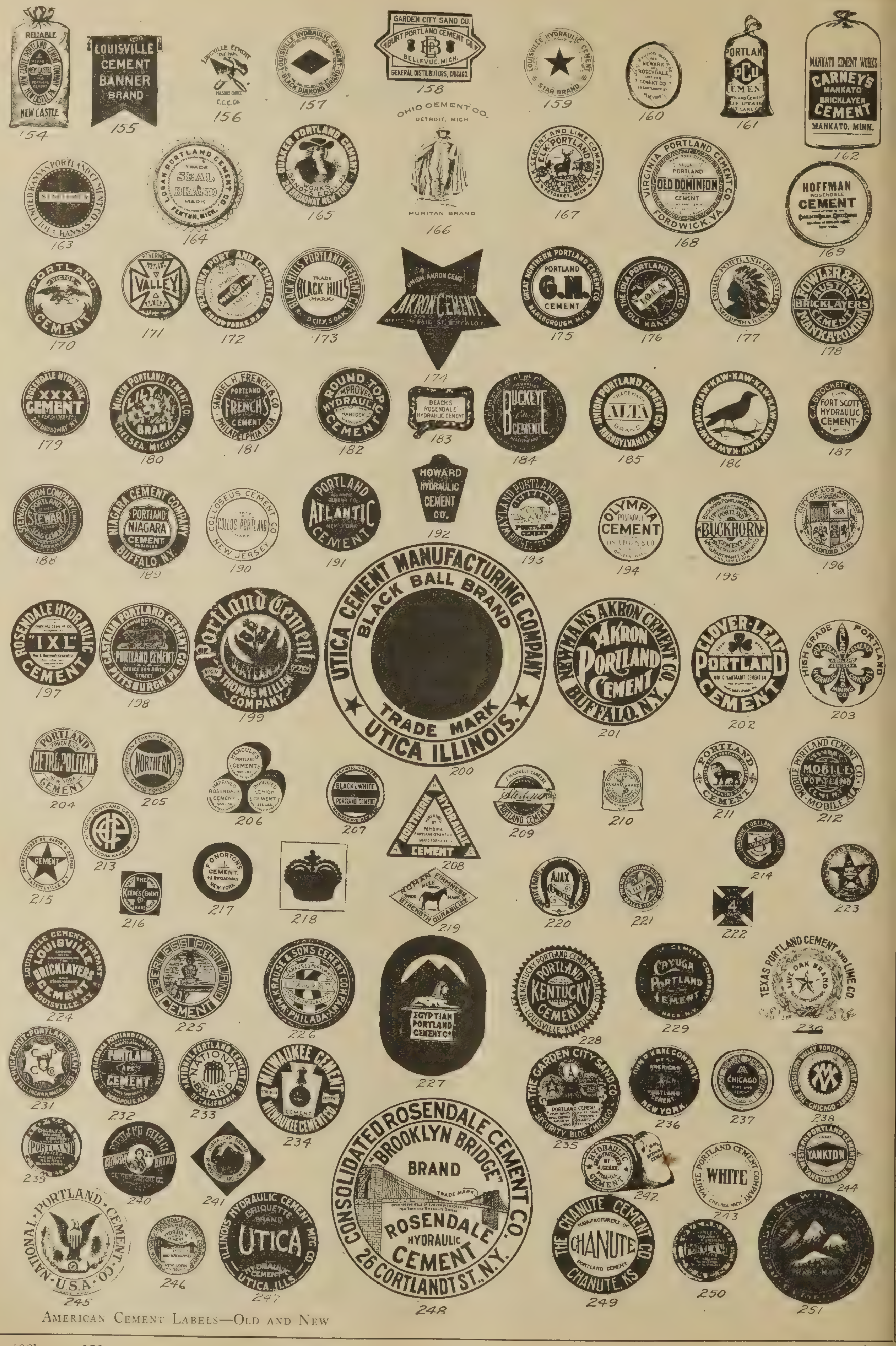
The Louisville Cement Co. at one time controlled a number of natural (hydraulic) plants in Ohio, Indiana and Kentucky. As a result of this, quite a number of the brands shown herewith can be classed as belonging to the *Louisville family*. They are: No. 155, "Banner" brand; No. 156, "Masons' Choice" brand, showing the trowel and hammer of the craft; No. 157, "Black Diamond" brand; No. 159, "Star" brand; No. 218, "Crown" brand; No. 222, "Best Four" brand, and No. 224, "Bricklayers'" brand. They also had a "U. S. Flag" brand, the use of which, of course, is now prohibited by law. These brands are all obsolete. This company's only remaining brand, the "Speed", was shown in the February installment.

No. 158 shows the two briquettes of the old *Burt* company, which has been succeeded by the Alpha.

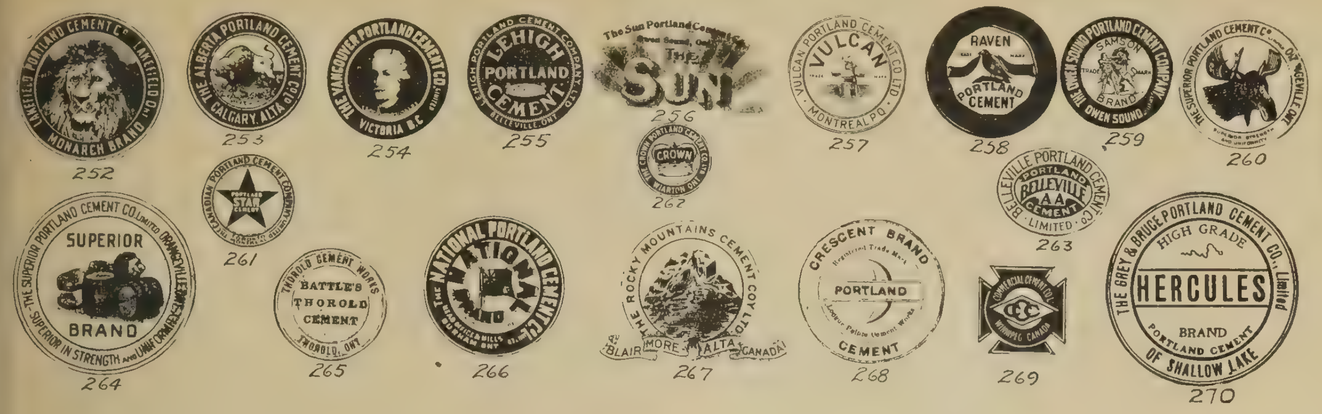
No. 160 is an old hydraulic brand, as is also No. 162.

No. 161 is active, as we all know.

Nos. 164, 165 and 166 were brands that never materialized. In No. 165 we have the case, presum-



AMERICAN CEMENT LABELS—OLD AND NEW


252
LAKEFIELD PORTLAND CEMENT Co LAKEFIELD ONT.
MONARCH BRAND
253
THE ALBERTA PORTLAND CEMENT CO.
CALGARY, ALTA
254
THE VANCOUVER PORTLAND CEMENT CO. LIMITED
VICTORIA B.C.
255
LEHIGH PORTLAND CEMENT
BELLEVILLE ONT
256
The Sun Portland Cement Co.
Owen Sound, Ont.
THE SUN
257
VULCAN PORTLAND CEMENT CO. LTD.
VULCAN
MONTREAL P.Q.
258
RAVEN
PORTLAND CEMENT
259
OWEN SOUND PORTLAND CEMENT COMPANY
SAMSON BRAND
OWEN SOUND
260
THE SUPERIOR PORTLAND CEMENT CO.
261
CANADIAN PORTLAND CEMENT COMPANY
STAR
262
CROWN
263
BELLEVILLE PORTLAND CEMENT CO.
BELLEVILLE AA CEMENT
LIMITED
264
THE SUPERIOR PORTLAND CEMENT CO. LIMITED ORANGEVILLE
SUPERIOR
BRAND
SUPERIOR IN STRENGTH AND UNIFORMITY
265
THOROLD CEMENT WORKS
BATTLE'S THOROLD CEMENT
THOROLD, ONT.
266
THE NATIONAL PORTLAND CEMENT CO.
NATIONAL BRAND
267
THE ROCKY MOUNTAINS CEMENT COY LTD.
BLAIRMORE ALTA CANADA
268
CRESCENT BRAND
PORTLAND
CEMENT
269
270
THE GREY & BRUCE PORTLAND CEMENT CO. Limited
HIGH GRADE
HERCULES
BRAND
PORTLAND CEMENT
OF SHALLOW LAKE

Canadian Cement Labels

ably, where an infringement was made on a well-known brand, and it is doubtful if this brand as originally designed could have survived, due to prior rights of the other party.

The Old Dominion long ago joined the Lehigh outfit.

Nos. 169, 246 and 248 belonged to the consolidated Rosendale Cement Co., the latter being a very well-known brand in its day.

Nos. 170 and 171 represent dealers' brands.

Nos. 172 and 208 belonged to the old Pembina company.

South Dakota craves a cement plant, but the Black Hills project came to naught.

Nos. 174 and 178 are old hydraulic cements, and Nos. 175, 176 and 177 were once very active producers.

In the fourth row we have: Nos. 179 and 181, two dealers' brands; Nos. 180 and 186, proposed brands; Nos. 182, 183 and 187, hydraulic cements, the latter being one of the few remaining hydraulic plants in operation at this time. Nos. 184 and 185 were once well-known brands.

In the fifth row are shown; No. 188, an old puzzolan brand; Nos. 189,192, 193 and 195 are *has-beens;* No. 190 was never a producer; No. 194 was a dealer's brand and No. 196 represented the plant operated by the City of Los Angeles. Although the latter is no cement brand, the design was added to the collection to give significance to the fact that this city had its own plant.

The sixth row reveals: No. 197, an obsolete Rosendale brand of the present Phoenix company; No. 198 is at present still on the active list; Nos. 199 and 201 are old brands of the Empire State. No. 200 shows another hydraulic plant that is now in operation; No. 202 was a dealer's brand, and the company represented by No. 203 only went so far as to organize.

In the seventh row are seen: Nos. 204, 207 and 209, three dealers' brands; Nos. 205 and 211, obsolete brands; No. 206 was the trade-mark of the old Hercules plant at Coplay, Pa., which was dismantled about 15 years ago. Nos. 210 and 212 were only proposed.

In the eighth row we find: Nos. 215, 216, 217 and 220 as being dealers' brands.

Nos. 225 and 227 are active brands. No. 226 was acquired by the Alpha company many years ago, and represented the Krause plant at Martin's Creek, Pa. Nos. 229 and 230 have been absorbed by other interests.

Nos. 231, 233 and 238 did not produce; Nos. 232 and 237 were absorbed: No. 234 is an old hydraulic brand, obsolete; and Nos. 235 and 236 are dealers' trade-marks.

No. 239 was a dealer's brand; Nos. 240 and 244 are old brands which are now out of date, and No. 243 was never put on the market.

The company represented by No. 245 was organized only; No. 247 is an obsolete hydraulic brand, and No. 251 was the only company that operated in the New England States.

The labels numbered from 252 to 270 are all Canadian brands, the majority of which are still active. Our Canadian friends will, no doubt, be glad to have a look at these trade-marks.

Scientific Quarry Blasting[1]

Measurements, Calculations and Records

By J. Barab

Hercules Powder Co.

I wish to speak of something that is too much neglected by nearly all users of explosives—the matter of controlling expense by making preliminary measurements and calculations and by keeping records. Many quarrymen, who are greatly concerned over every penny lost in paying a workman for overtime he did not put in, are oblivious to dollars lost through operating inefficiency, merely because the latter is less tangible. A mistake in time keeping involving a dollar or two is considered serious, while a mistake in estimating the charge required for a deep well hole, which may increase the cost of production hundreds of dollars, due to the difficult digging it leaves for the steam shovel, is often overlooked. Heavy losses due to poor methods are frequently classed as unavoidable burdens or necessary working expense; but a careful record system of each operation should reveal these losses and indicate how to avoid them.

It should be obvious to anyone that no matter how sound in theory our methods may be, in a practical matter involving so many variations in the material blasted and the conditions under which it is blasted, and so many opportunities for human error, we shall never be able to apply our knowledge to the best advantage unless we take steps to correlate and record all these diverse factors as they occur in our work.

There are quarrymen who can, by looking at a hole, estimate closely the correct amount of explosives to use. It has been our experience, however, that in many instances serious errors are made by the best judges. Careful measurements should be made for all

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[1] Part II of a paper delivered at the Sixth Annual Convention of the National Crushed Stone Association, Chicago, Ill., Jan. 16, 1923. For Part I see Cement Mill Edition of Concrete, April, 1923, page 60.

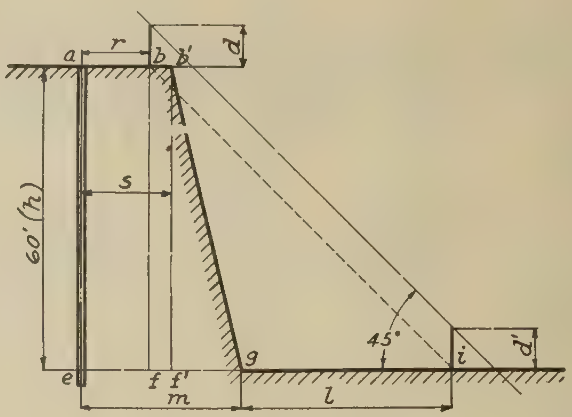


FIG. 13

blasts, and the quantity and distribution of explosives should be accurately calculated before a pound of powder is loaded. This work may seem burdensome to those who are not accustomed to it, but it will more than pay for itself by obviating mistakes in judgment that would otherwise not be discovered until the steam shovel encounters hard digging.

Experience is our best guide in determining the amount of powder which will be required per ton of rock. Once this is settled, the measurements necessary for calculating the burden or tonnage on each hole should be made. If there is an engineer on the job he can make a survey before the blast. Failing this, however, the following simple method will give results that closely approximate engineers' measurements.

The calculations for finding the burden at the toe are illustrated in Figure 13. The height of the bank can usually be ascertained by throwing over a line—and the distance between holes is readily found with a tape. The distance d is the height of the observer's eye from the ground; r is the distance from the hole to the point at which the observer stands when taking measurements. With a hand level, set at 45°, a sight is taken down to the quarry floor to a rod on which a point has been marked a distance from the ground—d', equal to d. A stake is dropped on the quarry floor at the point determined by this 45° line. The distance from the stake to the toe is measured with a tape—it is shown in Figure 13 as l.

In the right triangle bfi, with its hypotenuse at 45°, the leg, bf, is equal to fi. The burden on the toe of the hole, m, equals $fi+ef-l$. But $fi=fb=h$, and $ef=r$. Therefore, $m=h+r-l$.

As an example of how to calculate the proper explosive charge, let us assume a problem where h, the height of the bank, is 60 ft.; r, the distance of the observer from the hole, is 12 ft.; s, the distance from the top of the hole to the rim, is 18 ft.; and l, the distance from the rod to the toe of the quarry, is 40 ft. Also assume that the distance of this hole from the adjoining holes on either side of it is 15 ft.; that the rock weighs 160 lbs. per cu. ft.; and that one pound of explosive should be figured on for each 4 tons of rock.

From the formula developed above, m, the burden on the hole at the toe, equals $h+r-l$, or $60+12-40$, which is 32 ft. The area $ab'ef'$ equals $18\times60=1080$ sq. ft. Area $b'f'g$ equals $(32-18)\div2\times60=420$ sq. ft. The total area $ab'ge$ equals $420+1080=1500$ sq. ft. This multiplied by 15 ft., the linear distance along the face that this hole should break, equals a total burden on the hole of 22,500 cu. ft. This multiplied by 160 equals 3,600,000 lbs., or 1800 tons of rock. Dividing 1800 tons by 4, the proper proportion of loading known from experience, gives 450 lbs. as the proper explosive charge for this hole. The correct charge for each hole should be calculated in this manner before a pound of powder is loaded.

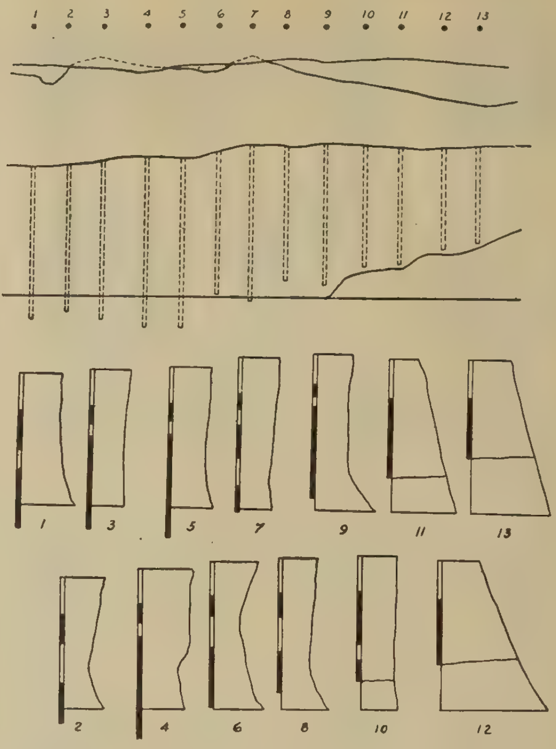


FIG. 14

Not only are better results obtained with less cost when the explosive charge for each hole is carefully calculated, but quite often considerable damage may be done unless this practice is followed. Fig. 14 illustrates a shot which might have had serious consequences had not the charge in each hole been figured very carefully. It will be seen from the diagrams of the cross sections taken at each hole that the bank was very irregular; in some places there was a considerable overhang at the top and at other holes an unusually heavy toe. If the explosive charges in holes 2, 7 and 8, for example, had not been broken at the point near the bottom where the bank sloped in towards the hole, rocks might have been thrown far enough to damage the crusher and boiler house and dwellings, some of which were within 300 ft. of the face. However, by calculating the burden on each hole and placing the charges in the holes so that they were not concentrated at the places where the bank sloped inward, none of the rock was thrown more than 150 ft. from the face.

Removing fragments of broken rock from the quarry floor and placing them in cars for transportation to the kilns is a very important lime-plant quarry process, states Oliver Bowles, mineral technologist, Bureau of Mines. At most lime plants rock-loading constitutes the largest single item of quarry cost. In view of the great expense involved in loading, a consideration of the relative merits of different methods followed, and the conditions under which each method may be most advantageously employed are worthy of more than ordinary attention. These matters are discussed in Serial 2446, which may be obtained from the Bureau of Mines, Washington, D. C.

Cement Labels I Have Met—Part 5

By Charles W. Erdell,
Bethlehem, Pa.

Lands Across the Sea! Brands Across the Sea!

In times past we have had our many slogans concerning things across the sea. Who of us does not remember when, in the days of our youth, we were told of the wonderful "Lands across the sea" and the "Ships that come sailing across the sea?" During the Great War we had an imaginary *Bridge of Ships Across the Sea*, and in times of peace we have endeavored to strengthen that national policy of *Hands Across the Sea.* How well we, as Americans, have succeeded in this laudable endeavor is a matter that behooves each one of us to ponder with serious thought. As we turn our gaze to foreign shores, we cannot help but feel that the peoples of Europe are at this very moment subconsciously looking in our direction, with the hope that America will come to their rescue and assist in solving their problems. Let us hope that the time will not be far distant when perfect amity rules the universe. With this thought uppermost, let us express the desire that our readers here and abroad will find much in this issue of Concrete that will prove highly interesting and valuable, and of mutual benefit to all.

It is a matter of pride to the publishers that it has been found possible to publish at this time the first group of miniature cement labels of brands representing manufacturers on the other side. To our readers we will wish to say then that the old adage of *Hands Across the Sea* will be combined with our own term of *Brands Across the Sea*, and, together, the twain shall stand as one, signifying *Friends Across the Sea!*

Arrangement of Foreign Labels

In this issue of Concrete a total of 74 miniature cement labels has been reproduced. A few words would be in order at this juncture to state that the arrangement of these labels and the order of their reproduction necessarily depended upon the matter of color scheme. The publishers, have, therefore, arranged these labels in such a manner that the best possible results have been obtained. It will be found that a certain number of labels was selected from the group of each country and the whole lay-out was designed with the purpose in view of properly blending the colors and of having as many countries represented in this issue as possible. It is confidently hoped that the arrangement as presented herewith is the best that could have been secured under all conditions. To those of our readers from abroad who are familiar with the various brands of their respective countries, we would state that many other foreign labels remain to be shown in following issues of this magazine, and succeeding issues should be looked forward to with unabated interest.

Number of Foreign Brands

It is appreciated by us all that the number of labels of European brands to be shown cannot in any measure be as complete and comprehensive as was the case with the brands of the manufacturers of the United States and Canada. The reason for this will be obvious when it is remembered that the matter of collecting *miniature* cement labels is something far different and presents many more difficulties than any other *collecting* hobby that one may possess. In the first place, practically all of the cement manufacturers have some design or other for their bags and barrels. However, the matter of having a miniature label is another thing! It has been found that practically all of the American and Canadian plants have their large bag and barrel labels reduced to miniature size for advertising purposes, etc. This is, however, very far from being the case with our friends across the seas, and it is a matter of conjecture whether 50% or more of them make use of the minature along the same lines as we do here.

In the second place, the matter of distance and disparity in language precluded a 100% effort on the part of the writer to have the greater majority of the foreign plants represented. And, lastly, to paralyze the whole scheme so far as it pertained to the gathering of foreign brands, the Great War, with its attendant demoralization of business, broke out and much valuable time was lost, which will account for the fact that many well-known European brands of that period were not secured, which since may have become obsolete. We must, therefore, do the best with what we have and it is sincerely hoped that our collection of these foreign brands may be as truly representative of the cement industry in those lands as is possible. Our only regret shall be that we have not more brands to show than the few hundred that are in our possession.

Method of and Difficulties in Securing Brands

As previously intimated it was a difficult matter to secure as many of the foreign labels as did find their way into this collection. Believing that it would be of interest to our readers to know how this was accomplished, the facts hereinafter set forth will aid in elucidating.

Back in the year 1906, when the writer conceived the idea of a miniature cement label collection, no thought was at first given to the desirability of including the brands of the foreign manufacturers, as it was not thought possible that they had adopted the minature label to such an extent as later proved to be the case. The *grind* for American labels went merrily on and, one day, early in 1917, a friend connected with one of the cement companies sent me a newspaper clipping relating to a certain cement company operating in Ireland. Immediately dawned the thought of expanding and including in the collection as many of the labels of foreign countries as could easily be obtained. A letter to the editor of the paper responsible for the clipping brought forth the whereabouts of the cement manufacturer in the Emerald Isle. With proper apologies to *Pat*, "*a comunicashun was sint acrost the pond*," and in due time was received at this end a rubber-stamp facsimile of the trade-mark of the plant operated in Drinagh, Wexford. This trade-mark is shown on these pages, being the only one in the entire collection that represents Ireland. The emblem is the harp, so beautifully pictured in Moore's never-dying song, *The Harp That Once through Tara's Hall!*

Having thus embarked upon the collection as a world-wide enterprise, active steps were taken on the assumption that foreign manufacturers would be glad to have their trade-marks included in what I, at the time, termed as the *Collection of Miniature Cement*

Labels of the World. This phrase was the principal feature in all letters sent to manufacturers for labels, thereby hoping to impress upon them the fact that the project was of such an extent that they would very cheerfully allow their trade-marks to be included in the collection.

The English Brands

Casting about for some means whereby communication could be established with the cement people direct, it was my purpose to secure first the labels of the English mills. A directory of the manufacturers, on the same order as published in this country, was not available at that time, but a list of the concerns of the United Kingdom was secured, and upwards of 80 letters were written to as many firms. Only about 50% responded and not all sent labels. The thought occurred that possibly the manufacturers were averse to sending their trade-marks, not fully appreciating to what use they would be put, in spite of the fact that it was mentioned that the collection was intended for public exhibition. This will explain to some extent why many more of the old English brands are not represented. It should be noted, however, that quite a great deal of correspondence developed with a few of the companies in England, and some labels were exchanged from time to time. During the course of our mutual correspondence, it was suggested that I communicate with a certain party in Germany, who at that particular time was an authority on matters of this nature, having been interested in the compilation of a cement directory of the German cement and lime industry.

The German Brands

After writing to this man, who resided near Hamburg, I was gratified to learn that he was well versed in three or four languages, including English, of course, and upon stating my purpose clearly, and assuring him that my motive was above suspicion and void of a mercenary purpose, the way was paved for that voluminous correspondence in which we engaged from that time forward. Needless to say, both of us entered into the spirit of the thing with whole-hearted enthusiasm, as the feeling was mutual that some day our collections of labels would be both valuable and highly treasured. Looking back, it is with a great deal of satisfaction that I can say that the painstaking efforts put forth have been conducive of a very worthy object.

We corresponded for a period of several years and during all of this time we indulged in the business of exchanging miniature labels, at the same time endeavoring to secure all of the brands existing at that time. Sometimes the letters from the other side would bring only one or two of the treasured miniatures, but it was ever the writer's wish to send more than were received, fully realizing the fact that here on this side was a greater store to draw upon than was the case with Herr Traeger (my correspondent). It will be interesting to note that in addition to the miniature brands, he was also collecting the labels that were used on barrels. He induced me to become interested in this also, but after a time it was given up, as it was felt that the possibilities along this line were too great and never-ending, and I had no idea to what uses the large labels could be properly put. It certainly would be a difficult matter to display five or six hundred large barrel labels, commensurate with the time and cost of securing them! I accordingly discontinued the collecting of large labels and determined to adhere to the collecting of the miniatures only.

One day I was called to the postoffice to pay a tax on a package from my German friend, and upon duly paying Uncle Sam's representative the proper amount of impost, I was pleased to find that I was the recipient of a brand new directory of the German *Zement und Kalk Industrie!* Compared with our cement directories of that period, this was a veritable mine of information, and it contained some valuable features that it would have been well to embody in our publications of a similar character. Upon carefully studying the new book it was found that there were a number of brands shown therein which were not included in my collection. Upon taking this up with Herr Traeger, he advised that no duplicates of these brands were available, and my only recourse was to clip these much-desired trade-marks from the directory. This proved a painful task, as the book was somewhat mutilated. However, I believe that the ends fully justified the means.

A recollection of an incident that occurred during the course of our correspondence is the fact that one day I received with a number of labels a rectangular *sticker*, about three by four inches in size, bearing the likeness of Count Zeppelin. It was stated that these stickers were disposed of by friends of the Count at a price of one mark each, and that the proceeds were to be devoted to the building of the *Zeppelin II.* Not much attention was paid at the time to this little means of providing the necessary capital wherewith the experiments on the giant ship of the air were defrayed. What history was then in the making is only too evident to us all, and what part this little sticker played in the days that followed is hard to tell.

The Belgian Brands

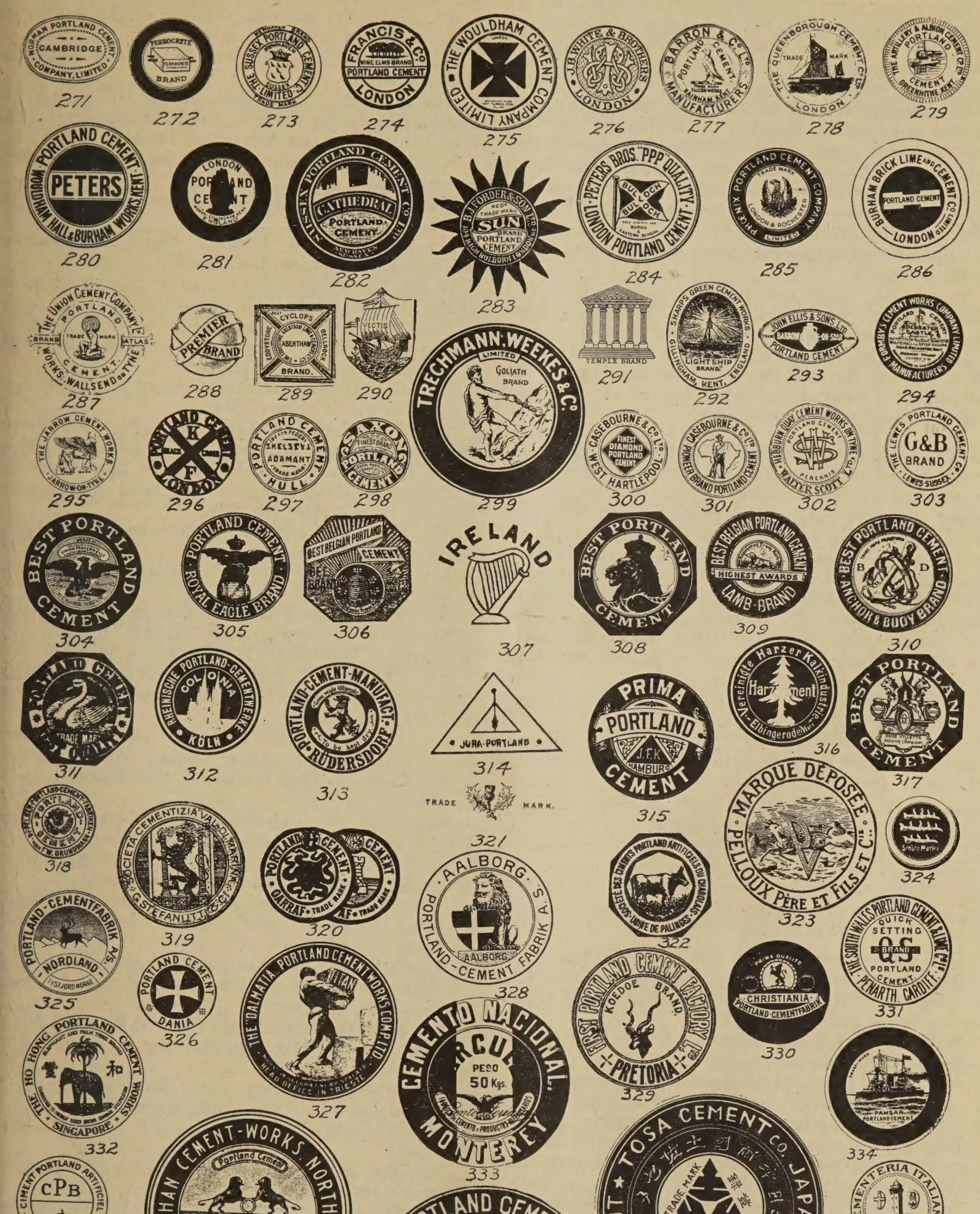
During the course of my correspondence with some of my friends in the United States, it was suggested that I get in touch with a certain manager of a cement plant located in Tournai, Belgium. No idea was entertained that this little country was such a large producer in this line at that time. However, I wrote to the person mentioned and, as was the case with my German collaborator, quite an extensive correspondence developed and we exchanged labels.

At first, however, this busy manager of a busy Belgian plant did not have a collection of miniature labels, but he became interested in the matter to such an extent that he did all in his power to secure the various trade-marks of his country. Sometimes I had misgivings that an imposition was made on his good nature, but, nevertheless, always and ever he was happy and anxious to assist in the project. A goodly number of the miniatures of Belgium was secured through his activity, and it is hoped that the American brands sent him in return, exceeding his by two to one, were of such interest that he was well repaid for his kindness and assistance.

During the early stages of the war, when the armies were sweeping onward, my heart went out in sympathy to him when I read the dispatch in the papers that his town had been laid low and the cement plant demolished! What vicissitudes the cement industry of Belgium and France have gone through during the past decade it certainly is difficult for us to realize, even at this late date.

Japanese and Other Brands

The matter of gathering this immense collection of labels was not an easy task, by any means. Every opportunity that presented itself was employed to gain the desired ends. One day noting a list of the Japanese plants, interest was aroused in one of the Japanese students in one of our local colleges, and he cheerfully communicated with his home friends. In a few months' time the writer was presented with a dozen large Japenese cement labels. Through a misunderstanding no small labels were asked for, and the work had to be done all over, which shows that perseverance is the only thing that counts.


NORMAN PORTLAND CEMENT COMPANY, LIMITED CAMBRIDGE
271
FERROCRETE BRAND
272
THE SUSSEX PORTLAND CEMENT CO. LIMITED NEWHAVEN TRADE MARK
273
FRANCIS & Co NINE ELMS BRAND PORTLAND CEMENT LONDON
274
THE WOULDHAM CEMENT COMPANY LIMITED
275
J.B. WHITE & BROTHERS LONDON
276
BARRON & Co. Ltd. PORTLAND CEMENT MANUFACTURERS RAINHAM, KENT
277
THE QUEENBOROUGH CEMENT Co. Ltd. TRADE MARK LONDON
278
THE ARTILLERY & ALBION PORTLAND CEMENT Co. Ltd. GREENHITHE, KENT
279
PORTLAND CEMENT PETERS WOULDHAM HALL & BURHAM WORKS, KENT
280
LONDON PORTLAND CEMENT ENGLAND
281
SUSSEX PORTLAND CEMENT Co. Ltd. CATHEDRAL PORTLAND CEMENT NEWHAVEN SUSSEX
282
B.J. FORDER & SON Ltd. TRADE MARK SUN BRAND PORTLAND CEMENT HIGH HOLBORN LONDON
283
PETERS BROS. "PPP" QUALITY LONDON PORTLAND CEMENT BULL OCH
284
PHOENIX PORTLAND CEMENT COMPANY TRADE MARK LONDON & ROCHESTER LIMITED
285
BURHAM BRICK LIME AND CEMENT Co. LIMITED PORTLAND CEMENT LONDON
286
THE UNION CEMENT COMPANY LTD PORTLAND CEMENT TRADE MARK BRAND ATLAS WORKS, WALLSEND ON TYNE
287
PREMIER BRAND
288
CYCLOPS ABERTHAW BRAND. EDDYSTONE BELLROCK
289
VECTIS
290
TEMPLE BRAND
291
SHARPS GREEN CEMENT WORKS GILLINGHAM, KENT, ENGLAND LIGHTSHIP BRAND
292
JOHN ELLIS & SONS LTD BARROW-ON-SOAR PORTLAND CEMENT
293
FORMBY'S CEMENT WORKS COMPANY LIMITED PORTLAND CEMENT ROCHESTER CASTLE MANUFACTURERS
294
THE JARROW CEMENT WORKS JARROW-ON-TYNE
295
PORTLAND CEMENT K F LONDON
296
SKELSEY'S ADAMANT PORTLAND CEMENT HULL TRADE MARK
297
SAXON FINEST BRAND PORTLAND CEMENT
298
TRECHMANN, WEEKES & Co. LIMITED GOLIATH BRAND
299
CASEBOURNE & Co Ltd FINEST DIAMOND PORTLAND CEMENT WEST HARTLEPOOL
300
CASEBOURNE & Co Ltd PIONEER BRAND PORTLAND CEMENT
301
HEBBURN QUAY CEMENT WORKS ON TYNE PORTLAND CEMENT WALTER SCOTT Ltd. PERENNIS
302
THE LEWES PORTLAND CEMENT Co. G&B BRAND LEWES SUSSEX
303
BEST PORTLAND CEMENT
304
PORTLAND CEMENT ROYAL EAGLE BRAND
305
BEST BELGIAN PORTLAND CEMENT BEE BRAND
306
IRELAND
307
BEST PORTLAND CEMENT
308
BEST BELGIAN PORTLAND CEMENT HIGHEST AWARDS LAMB-BRAND
309
BEST PORTLAND CEMENT B D ANCHOR & BUOY BRAND
310
PORTLAND CEMENT TRADE MARK QUALITY
311
RHEINISCHE PORTLAND-CEMENTWERKE COLONIA KÖLN
312
PORTLAND-CEMENT-MANUFACT. RÜDERSDORF To be kept dry
313
JURA-PORTLAND
314
PRIMA PORTLAND J.F.K. HAMBURG CEMENT
315
Vereinigte Harzer Kalkindustrie Harzment Elbingerode i. Harz
316
BEST PORTLAND CEMENT
317
PORTLAND CEMENT F.W. GRUNDMANN
318
SOCIETA CEMENTIZIA VAL DI MARINA G. STEFANUTTI & Ci.
319
PORTLAND CEMENT GARRAF TRADE MARK
320
TRADE MARK
321
SOCIÉTÉ DES CIMENTS PORTLAND ARTIFICIELS DU CHAROLAIS USINE DE PALINGES
322
MARQUE DÉPOSÉE PELLOUX PÈRE ET FILS ET Cie
323
324
PORTLAND-CEMENTFABRIK A/S NORDLAND
325
PORTLAND CEMENT DANIA
326
THE DALMATIA PORTLAND CEMENT WORKS COMP. LTD. TITAN HEAD OFFICE IN TRIESTE
327
AALBORG PORTLAND-CEMENT FABRIK A.S. AALBORG
328
FIRST PORTLAND CEMENT FACTORY Ltd. KOEDOE BRAND PRETORIA
329
PRIMA QUALITE CHRISTIANIA PORTLAND-CEMENTFABRIK
330
THE SOUTH WALES PORTLAND CEMENT & LIME Co. Ltd. QUICK SETTING QS BRAND PORTLAND CEMENT PENARTH, CARDIFF
331
THE HO HONG PORTLAND CEMENT WORKS ELEPHANT AND PALM TREE BRAND SINGAPORE
332
CEMENTO NACIONAL HERCULES PESO 50 Kgs. MONTEREY
333
PANSAR PORTLANDCEMENT
334
CIMENT PORTLAND ARTIFICIEL CPB BEAUMONT S/O MARQUE DEPOSÉE
335
TONGSHAN CEMENT-WORKS NORTH-CHINA Portland Cement
336
TOSA CEMENT Co. JAPAN PORTLAND CEMENT TRADE MARK
337
CEMENTERIA ITALIANA LIVORNO
338
HODOLEINER CEMENT
339
CEMENTO LA TOLTECA PORTLAND
340
WILSON'S PORTLAND CEMENT TRADE MARK AUCKLAND, N.Z.
341
PORTLAND CEMENT 大日本帝國越中 TRADE MARK 標商 SANETSU CEMENT Co., L^{TD}. ECHU JAPAN 三越セメント株式會社
342
THE SOUTH WALES PORTLAND CEMENT & LIME Co. Ltd. DRAGON BRAND CARDIFF PORTLAND CEMENT
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T
344
CIMENT PORTLAND C BRAILA
345

FOREIGN CEMENT LABELS

The various other trade-marks came to hand through other devious channels, but a few words more might be added to indicate how thoroughly the quest for labels was prosecuted. One of my close personal friends was scheduled to go to Africa to help to install some American cement machinery in the cement plant located at Pretoria. Needless to say, he was given the task to secure some of the small trade-marks of that company. The importance of securing these labels was made known to him so fervidly that it is doubtful if he would have sailed back home had he not brought with him the much-sought brands. A year elapsed and upon his return another prized addition was placed in the collection.

So the tale could run on, *ad infinitum*, but, as a closing remark, let it be said that all the time and labor expended in securing this collection of labels have been well worth-while, and I am happy to be able to present them to view through the very kind assistance of the publishers of Concrete. May you all enjoy this so-called *Encyclopoedia Cementania!*

Labels in This Issue

It requires but a glance at the page of labels herewith reproduced to indicate that they are of a totally different character than the American and Canadian brands previously shown. It is very apparent to the casual observer that here we have a group of cement brands that is entirely at variance with the accepted form of trade-marks. There are several reasons for this, but, undoubtedly, the principal one that accounts for this difference is the fact that the manufacturers on the other side make general use of animals, things and objects in the designs on their labels, while we here have many brands of a simpler get-up and which depict no particular thing or object. The reader will study this page of 74 labels with interest. The following countries and domains are represented by the number of brands as noted:—

England	32	Sweden	1
Ireland	1	Austria	1
Scotland	1	Roumania	2
Wales	2	Switzerland	1
Belgium	8	China	1
Germany	6	India	1
France	3	Japan	2
Spain	1	Africa	1
Italy	3	New Zealand	1
Norway	2	Mexico	2
Denmark	2		

It is quite probable that a number of these trade-marks have become obsolete by this time and, no doubt, our friends on the other side will know which brands represent the active companies.

Nos. 271 to 303 represent the 32 labels of English manufacturers here shown.

No. 271 is the label of the old Norman company, Cambridge, which was succeeded by the present Saxon company, which latter label is shown as No. 298.

No. 272 is the trade-mark of the Associated Portland Cement Manufacturers, which was organized in 1900, and is composed of a number of plants.

Nos. 273 and 282 are the labels of the Sussex company, Newhaven, Sussex.

The "Nine Elms" is the feature of the brand of Francis & Co., London.

No. 275 is the "Red Cross" of the Wouldham company, Wouldham. This company also has, or had at one time, a "Union Jack" brand, which will appear later.

No. 276, J. B. White & Bros., London, is a very old brand, and the writer was informed at one time that this plant was located on the site of the earliest cement plant in England.

No. 277, Barron & Co., Rainham, Kent, has the famed falcon as their brand. Would this collection be complete were this renowned bird not represented?

No. 278 shows the "Barge" brand of the Queensborough Co., London.

No. 279 is the war-like emblem of the Artillery & Albion works, Greenhithe, Kent.

Nos. 280 and 284 are the well-known brands of Peter Bros., Kent.

No. 281 is the trade-mark of the Gillingham Co, London, displaying the right hand as the emblem. Thi is on the order of our American "Dexter" brand.

No. 283 presents the brilliant "Sun" brand of B. J Forder & Son.

The "Phoenix" is strikingly shown in No. 285, of th Phoenix company.

No. 286 shows the "Burham" brand of the Burhan Brick, Lime & Cement Co., London.

In No. 287 we have the Union company making us of the ever-old "Atlas" for their product.

Nos. 288, 290 and 291 are brands of which the write has no definite information, but can no doubt be properly placed by some of our readers.

No. 289 is the label of the Aberthaw Lime & Cemen Co., being the "Cyclops" brand.

The "Lightship" brand as shown on No. 292, is owne by Sharp's Green Cement Works, Gillingham, Kent

No. 293 represents John Ellis & Sons, Barrow-on-Soar

Rochester Castle adorns the label of Formby' Cement Works, label No. 294.

No. 295 is the effective trade-mark of the Jarro company, Jarrow-on-Tyne.

No. 296 shows us the "K. F., Black Cross" Londo brand.

No. 297 is Skelsey's Adamant Cement Works, at Hull

No. 299 is the very striking "Goliath" trade-mark o Trechmann, Weekes & Co., Halling-on-Medway.

The "Diamond" and "Pioneer" brands of Casebourne & Co., West Hartlepool, appear as Nos. 30 and 301, respectively.

No. 302 reveals the "Perennis" label of the Walte Scott, Ltd., Hebburn Quay Cement Works on Tyne

No. 303 is the "G. & B." brand of the Lewes company Lewes.

Nos. 304, 305 and 306 are the "Eagle," "Roya Eagle" and "Bee" brands of Belgian cements.

In No. 307 we have the trade-mark of the works i Ireland, previously alluded to in this article.

Nos. 308, 309, 310 and 311 are the "Lion", of Belgia "Anchor & Buoy" and "Swan" brands "Lamb" cements.

A pretty label in its original colors is No. 312, th "Colonia" brand of the Rheinische Portland Cementwerke, Koln, Germany.

No. 313 is the design of the plant at Rudersdorf, Germany. On this label appears the injunction *To b kept dry!*

The triangular design next shown represents th Portland Cement Fabrik, Jura, Switzerland.

No. 315 is the "Prima" brand of J. F. K., Hamburg Germany.

No. 316 is a tongue-twister, being the Vereinigte Harzer Kalkindustrie at Elbingerode.

No. 317 shows the brand of Rene Villette, Antoing Belgium.

No. 318 is the Oppelner Portland Cement Fabriken's label, which was formerly F. W. Grundmann.

Italy now comes into line, and in No. 319 we have trade-mark of the Societa Cementizia val Di. Marina, G. Stefanutti & Ci.

No. 320 is the label of a Spanish company, at Garraf.

No. 321, the thistle of Scotland, comes from the plant in Edinburgh.

Practice up on your French! Nos. 322 and 323 are from *Over There*, namely:—Societe des Ciments Portland Artificials Du Charolais, and Pelloux Pere et Fils et Cie.

No. 324 is of German origin, owner unknown.

No. 325, the Nordland, takes us to the Arctic Circle, representing the only cement works located that far north.

No. 326 is a Danish brand.

No. 327 comes from Italy and represents The Dalmatia Portland Cement Works Company, Limited, Trieste.

No. 328 is another Danish brand.

Reference was made in preceding paragraphs to the label of The First Portland Cement Co., Pretoria, Africa, which is shown as No. 329.

Norway is again represented by No. 330, in the label of the Christiana Cement Fabrik, Christiana.

The Far East beckons as we gaze upon the label of the works located at Singapore, Straits Settlement (No. 332).

Let us return to the Western Hemisphere, just for a moment, to look at Nos. 333 and 340, two Mexican brands.

No. 334 is the label of the Svenska Cement Fors Aktiebolaget, Malmo, Sweden. (The printed matter did not reproduce).

No. 335 is a French brand.

North China appears next, with its trade-mark, No. 336.

Note the oriental designs of the two Japanese labels, Nos. 337 and 342.

No. 338 is another brand from Italy.

No. 330 comes from Austria.

New Zealand steps into line with the two stars of Wilson's works, Auckland.

Nos. 344 and 345 represent brands from Roumania.

Portland Cement Association Meets

With an attendance of well over 200, among whom were a larger percentage than usual of cement mill superintendents and chemists, the spring meeting of the Portland Cement Association held in St. Louis, May 21 to 23, was an interesting and important meeting to all who attended the various sessions. Monday, the first day, was taken up by meetings of the various committees. The general mill session was on Tuesday and was followed by the business session on Wednesday. The formal dinner on Wednesday evening concluded the meeting.

MILL SESSION

Opening the general session for the discussion of problems relating to cement manufacture and mill practice, the report of the committee on accident prevention and insurance was read by H. A. Reninger of the Lehigh Portland Cement Co., in the absence of A. C. Tagge, chairman of the committee. The report of accident experience by plants was explained and discussed by H. J. Jacobsen, chairman of the committee.

A paper by P. H. Bates of the Bureau of Standards, Washington, D. C., on "The Possibility of Improving Hydraulic Cements" outlined the present situation in the cement industry and discussed the possibilities of further development of special cements such as natural cements and the so-called high alumina or fused cements. The natural cement industry was referred to as the "horrible example" of what lack of standardization of a product and lack of uniformity of purpose of those manufacturing it will bring about. The paper and discussion which followed it brought out the following interesting comments:

Natural cements have a desired property for mortar-fatness—which is almost entirely lacking in portland cement. Lime, magnesia and gypsum compete with portland cement, not on a strength basis but on a workability basis. The lime manufacturers are putting out a mixture of lime and portland cement which makes a mortar stronger than where lime alone is used, and at the same time has more workability than portland cement mortar. Natural and artificial slag cements have working possibilities and tend to resist action of sulfate salts.

It is possible to increase the average quality of portland cement, as measured by present standards, approximately 50% without changes in equipment. Under present conditions a dozen brands of standard portland cement may vary from 65% to 100%. By the indicated slight changes in composition, careful milling of the raw mix, careful burning and grinding of the clinker, much improvement is possible.

HIGH ALUMINA CEMENTS

The fused or aluminate cements now being manufactured and used abroad are not new. Patents covering these cements were taken out by H. S. Spackman a number of years ago.

The likelihood of special cements competing with portland cement depends upon their ability to meet the specifications of portland cement. Alumina cements pass the specifications but their possibilities are limited by the deposits of bauxite.

The sales efforts to put alumina cements on the market in this country may present a larger problem than finding bauxite.

The Bureau of Standards is preparing to make high alumina cements for tests where concrete is required to withstand the action of sea water. The Bureau is also to make further study of the constitution of cement.

FUEL ECONOMY

The paper "Possibility, Necessity and Organization of Fuel Economy in Cement Mills," read by O. Lellep, combustion engineer, Giant Portland Cement Co., is presented in full elsewhere in this issue.

CONSERVATION

The report of the committee on conservation was read by H. A. Schaffer and the following subjects discussed: waste heat; labor statistics; preheating air for kilns; clinker grinding; kiln refractories; power consumption and distribution; kiln data; specific heat; new problems—admixture of fuel oil with low grade coal for kiln fuel and fine grinding of coal.

Side trips were arranged during the convention for such members as desired to visit the Bates experimental highway in Illinois and also the plant of the Bemis Bros. Bag Co. in St. Louis.

THE BANQUET

After the dinner Wednesday evening, at which Blain S. Smith was toastmaster, the ladies who were present with members of the association were extended an invitation to listen to Floyd W. Parsons on "The Edge of the Future" and to take a trip around the world by the aid of moving pictures and a talk by A. Y. Gowen who recently returned from an exploring trip around the world in the 98-ft. motor boat, the "Speejacks."

The following members of the association and their representatives were registered at the convention:

REGISTRATION BY INDIVIDUALS———

ABRAMS, D. A. (Association), John L. Abbott (Alpha), Marion S. Ackerman (Lawrence), B. F. Affleck (Universal), John Ahnfelt (Universal), L. Anderson, Jr. (Alpha), W. A. Ansorge (Newaygo), Th. Avnso (Knickerbocker).

BARBAZETTE, J. H. (Alpha), O. V. Bartholomew (Trinity), George S. Bartlett (Universal), H. D. Baylor (Louisville), Raymond R. Bear (Lehigh), Adam L. Beck (Indiana), Marshal Beck (Indiana), F. T. Bentley (Universal), M. A. Berns (Universal), E. D. Barry (Universal), C. G. Besch (Missouri), M. M. Billings (Universal), H. L. Block (Missouri), Frederick Blanchard (Universal), George L. Block (Missouri), John W. Boardman (Huron), Nelson Borngesser (Alpha), E. D. Boyer (Atlas), C. H. Breerwood (Allentown), T. O. Bretherton (Penn Allen), Joseph Brobston (Dexter), C. A. Brooke

(Monarch), H. R. Browne (Huron), G. S. Brown (Alpha), W. Jesse Brown (National), L. R. Burch (Atlas), C. M. Burton (Alpha), C. M. Butler (Marquette).

CAMPBELL, H. C. (Association), W. S. Campbell (Alpha), A. G. Carlson (Universal), Charles A. Clark (Association), W. D. Cloos (Edison), Charles Catlett (Security), J. A. Coffey (Missouri), J. J. Collister (Atlas), George W. Cole (Sandusky), F. H. Compton (Louisville), Frank Conkling (Atlas), Charles F. Conn (Giant), F. M. Coogan (Alpha), T. H. Cosford (Marquette), C. B. Condon (Hawkeye), Loring A. Cover (Security), Charles H. Cox (Phoenix), B. G. Coyle (Missouri) J. E. Curtis (Peninsular), A. J. R. Curtis Association.

DALBEY, J. H. (Dixie), C. A. Day (Ogden), H. C. Day (Ogden), S. H. Dewson (Association), R. B. Dickinson (Marquette), H. L. Doble (Canada), L. L. Dodds (Missouri), W. R. Dunn (Vulcanite), H. R. Durbin (Texas), Walter G. Dutton (Bath).

EGE, C. R. (Association), W. B. Elcock (Association).

FELLOWS, A. M. (Alpha), C. D. Franks (Association), J. M. Franks (Alpha), H. E. Frech (Association).

GERSTELL, R. S. (Alpha). C. A. Gettler (Alpha), O. E. Gielow (Alpha), F. B. Gilbert (Security), B. L. Glover (Ash Grove), W. E. Gorg (Missouri), Albert Y. Gowen (Lehigh), L. L. Griffiths (Michigan), E. S. Gubernator (Lehigh), F. E. Guy (Universal),

HALPIN, T. F. (Marquette), M. H. Hammond (Indiana), Richard Hardy (Dixie), S. Henry Harrison (Vulcanite), H. M. Hess (Monarch), E. D. Hill (Louisville), H. W. Hilles (Dexter), C. A. Homer (Missouri), J. J. Hornung (Lehigh), Ray S. Huey (Universal), T. L. Hughes (Lehigh), C. R. Hulsart (Atlas), R. A. Hummel (Cuban), M. M. Hunter (Clinchfield).

IRVIN, Charles A. (International Ltd.), C. A. Irvin (Alpha).

JACOBSEN, H. G. (Association), H. F. Jennings (Wabash), J. B. John (Sandusky), E. M. Johnson (Universal), C. C. Jones (Wolverine), J. F. Jones (Gulf States), H. C. Jones (Huron), J. C. Josse (Alpha), J. D. Johnson (Canada).

KANENGEISER, F. R. (Bessemer), Forest Kaufman (Association), F. W. Kelley (Helderberg), R. J. Kellogg (GulfStates), George Kilian (Dixie), Morris Kind (Hercules), William M. Kinney (Association), W. H. Klein (Dixie), H. C. Koch (International Corp.), H. Krarup (Hawkeye).

LESLEY, Robert W. (Honorary), I. W. Lewis (Atlas), John G. Lind (St. Mary's Ltd.), O. N. Lindahl (Universal), W. D. Lober (Vulcanite), F. R. Loveridge (Alpha), J. W. Lowell (Universal).

McCLAREN, C. H. (Alpha), C. H. McNider (Northwest States), J. C. McCoy (Missouri), J. P. McCarthy (Michigan), F. L. McClintic (Alpha), D. H. MacFarland (Atlas), F. G. McKelvy (Alpha), E. J. Maguire (Sandusky), J. V. Mandia (Hawkeye), W. E. Mankel (Alpha), John J. Matthes (Alpha), C. D. Merritt (Alpha), C. P. Mitchell (Monarch), William Moeller (Texas), R. W. Moore (Dewey), E. J. Moors (Alpha).

NEWBERRY, William B. (Sandusky), George E. Nicholson (National).

PAGE, F. L. (Association), A. S. Parson (Trinity), J. R. Paul (Alpha), F. E. Paulson (Lehigh), H. W. Penzler (Alpha), S. N. Peters (Giant), J. F. Pollock (Ash Grove), John J. Porter (Security), N. S. Potter, Jr. (Michigan), Paul R. Price, (Marquette).

RADER, B. H. (Lehigh), H. D. Raff (Diamond), T. A. Railsback (Monarch), Lyman A. Reed (Diamond), C. H. Reigart (Nazareth), J. S. Reiter (Colorado), H. A. Reninger (Lehigh), H. O. Ritter (Alpha), Red Roberts (Wellston), Clinton B. Rogers (Sandusky), E. F. Rucker (Alpha).

SABIN, W. P. (Ash Grove), H. A. Schaffer (Association), John Schaeffer (Alpha), Charles Schmutz (Bessemer), Harold M. Scott (Atlas), S. W. Scott (Alpha), F. J. Sellinger, Jr. (Atlas), William G. Sharp (Wellston), A. H. Small (Marquette), Blaine S. Smith (Universal), C. R. Smith (Alpha), Frank H. Smith (Lawrence), C. H. Sonntag (Cape Girardeau), William S. Speed (Louisville), E. R. Stapleton (Tidewater), W. H. Steiner (Association), M. L. Stephenson (Wellston), S. E. Stephenson (Wellston), O. O. Stone (Association), Otis A. Strass (Indiana), H. Struckmann (Interna. C. Corp.), Humphrey Sullivan (Association), L. T. Sunderland (Ash Grove), B. L. Swett (Lehigh).

THORNTON, W. M. (Texas), L. S. Trainor (Association), F. M. Traynor (Lehigh), A. H. Turner (Alpha), F. G. Turner (Sandusky), Frank E. Tyler (Dewey), W. E. Tyler (Dewey), J. B. Turpin (Alpha).

ULRICKSON, C. E. (Trinity).

VANDOORN, J. C. (Universal), H. C. VanScoyoc (Canada), W. E. Viets (Alpha).

WARNER, H. O. (Colorado), R. A. Wetzler (Edison), G. E. Warren (Association), B. C. Wheeler (Marquette), J. A. Wheeler (Texas), J. M. Whitaker (Alpha), M. H. Wilhelma (Alpha), F. L. Williamson (Dewey), Riley Wilson (Wellston), Walter S. Wing (Universal), A. D. Wingate (Wellston), Dr. J. C. Witt (Association), C. D. Wright (Missouri).

YOUNG, E. M. (Lehigh).

Danger From Inflation

By F. P. Jones

President and General Manager, Canada Cement Co. Ltd.

The rural districts of Canada take care of about 45% of the total consumption in Canada in practically every line.

The question may then be asked: Have the rural districts greater purchasing power than last year? If not, where will increased business come from this year?

As far as the building boom in the United States is concerned, I believe it is largely due to artificial causes, the chief of which is the large amount of money in that country. It is also stimulated by the income tax. That is, a person cannot under the law deduct his rent paid from his income, for taxation purposes, but if he owns a house and invests his capital in property he practically deducts his rent from his income by deducting the interest on borrowed money, and makes a saving in his income tax.

Short-Lived Inflation

The next thing that impresses me is that Europe's purchasing power is greatly curtailed and that the United States to-day is commencing a period of inflation which I think will be short-lived.

Through their stringent immigration laws, they are creating a wage rate that is absolutely unsound. As Canadians are the only people who can go into the United States without restrictions, this undoubtedly will draw largely upon Canada's labor supply and that will tend to bring rates of wages to a point higher than industry or the consuming public can afford to pay. Otherwise, we will have to curtail production to the amount of labor available.

Operate Cement Plants 50%

In Canada, as far as cement manufacturing goes, our productive power is ahead of consumption and it certainly does not look like an opportune time for inflation. I do not expect that we will be able to operate during 1923 at more than 50% of capacity.

April Cement Production

Production of portland cement in April was over 11,350,000 bbls. according to figures just compiled by the United States Geological Survey. This represents an increase of more than 2,000,000 bbls., or approximately 23% over last year's April production, and is the largest quantity ever manufactured during that month. Production for the first four months of this year exceeded 37,000,000 bbls. as compared with about 27,000,000 bbls. in 1920, the best previous record for that period.

April shipments of cement from the mills were also unusually heavy for this season of the year and nearly reached the 13,000,000-bbl. mark—an increase of 50% over April 1922. For the first four months of 1923, shipments exceeded 34,600,000 bbls. as compared with 22,700,000 bbls., the 1919-1923 five-year average for the period.

Stocks of finished cement in manufacturers' hands at the end of April this year were 11,450,000 bbls. as compared with an average of about 12,200,000 bbls. for the five-year period 1919-1923. Taking into consideration the unprecedented early season demand which, since January 1, has absorbed over 12,000,000 bbls. more than ever before, manufacturers have made a remarkable record in keeping pace with the situation.